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Firms pitch CMIP over non-OSI nets

By Paul Desmond
Senior Editor

A growing number of vendors are developing methods to support Open Systems Interconnection net management protocols over non-OSI networks, an effort that could help users migrate their existing architectures to OSI.

The OSI/Network Management (NM) Forum is currently considering member proposals that call for the transport of OSI net management protocols over IBM Systems Network Architecture, Transmission Control Protocol/Internet Protocol and Common Channel Signaling System 7 (CCS7) networks.

The methods proposed would enable vendors to develop network management systems that support the OSI Common Management Information Protocol (CMIP) and Common Management Information Services (CMIS) but use non-OSI transport protocols on existing networks. That promises to clear the way for users to start employing CMIP and CMIS, even though they may not yet have full-blown OSI networks.

CMIP and CMIS are the OSI net management protocol and verb

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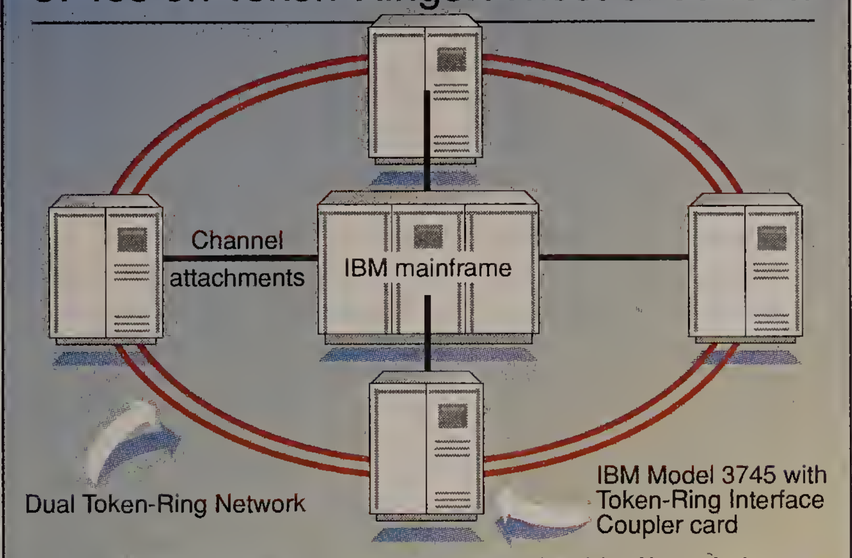
3745s on Token-Rings: A host of benefits



Linking IBM 3745 front-end processors through Token-Ring Networks improves network reliability, speeds communications and eliminates hard-wired connections between 3745s, and frees up 3745 ports. GRAPHIC BY SUSAN J. CHAMPENY

Users turn to token-ring LANs to network IBM FEPs

By Tom Smith
New Products Editor

Major users, including IBM, are using Token-Ring Networks to link Model 3745 front-end processors in their data centers to improve network reliability and throughput.

Using Token-Rings to link 3745s is proving to be an attractive alternative to hard-wiring the devices together or linking them through hosts via channel attachments.

In addition to increasing reliability, it enables 3745s to communicate at higher speeds and frees up V.35 ports.

American Express Travel Related Services Company, Inc. (TRS) is using a 4M bit/sec Token-Ring Network in its Phoenix data center to link nine 3745s outfitted with IBM's Token-Ring Interface Coupler (TIC) cards. TIC cards physically connect the 3745s to the Token-Ring.

Previously, each 3745 was hard-wired to every other 3745 in the data center — a complicated configuration that required use of a matrix switch for rerouting traffic in the event of a failure or to perform maintenance.

Using the local-area network to interconnect 3745s has improved reliability by reducing the

(continued on page 7)

NTI throws weight behind frame relay

Frame relay support for CO switches may speed delivery of new bandwidth-on-demand services.

By Bob Wallace
Senior Editor

NASHVILLE — Northern Telecom, Inc. last week announced frame relay support for its line of SuperNode central office switches, a move that may speed deployment of advanced network services by local and long-haul carriers.

Analysts said frame relay support is an important step toward a new generation of fast packet switching services — such as metropolitan-area network services and broadband Integrated Services Digital Network — that offer bandwidth on demand for such capacity-hungry applications as LAN interconnection, bulk file transfers and imaging.

Northern Telecom is the first central office switch vendor to announce frame relay support for its network switches.

"These products represent a major step in the right direction," said Nick Lippis, a principal consultant with Northeast Consulting Resources, Inc., a consultancy in Boston. "Carriers have been looking for a way out of the high-expense, low-profit [circuit-switched] private-line business and into true bandwidth-on-demand services."

Steve Sazegari, senior industry analyst with Dataquest, Inc. of San Jose, Calif., added. "Frame relay will help users reduce net costs and more efficiently support high-bandwidth applications," he said.

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What the top guns earn

Network budget	Compensation	
	Base salary 1990	Base salary 1989
$1m-$10m	$67,800	$63,400
$10m-$50m	$74,700	$69,100
$50m +	$93,100	$83,900

Average salaries of top network executives by size of network budgets.

SOURCE: WILLIAM M. MERCER, INC., DALLAS
GRAPHIC BY SUSAN J. CHAMPENY

ICA salary study shows pay trends

By Wayne Eckerson
Senior Writer

DALLAS — Salary increases for network professionals significantly outpaced those for workers in other fields this year, according to an International Communications Association (ICA) survey obtained by *Network World* last week.

Initial results of ICA's 1990 Telecommunications Professional Profile Survey show that salaries for all network professionals — from top network executives to junior technicians — jumped an average of 7.1% from 1989 to 1990.

That's well above the 5.4% average increase earned by workers in other industries. But it is less than the 8.7% increase that net professionals garnered in 1986, the last time ICA conducted the survey.

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NETLINE

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USER AND CONSUMER groups say AT&T isn't passing on all access charge savings to customers under price cap regulation. Page 2.

FRAME RELAY AND fast packet aren't a panacea for linking LANs. Page 2.

ONE VOICE WAS ALL it took to put approval of a key ISDN application profile on hold at an NIU Forum meeting. Page 2.

THE 16M TOKEN-RING SPEC won't have to be modified to avert interoperability problems, say IEEE 802.5 committee members. Page 4.

ALR UNLEASHES a line of powerful superservers to rival Compaq's SystemPro servers. Page 4.

INDEPENDENT LAN vendors are helping resellers meet changing user needs. Page 4.

NEWSPAPER

FEATURE

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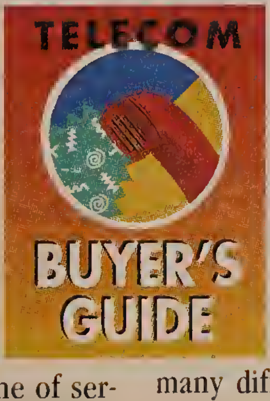
Calling cards offer users increased functionality

By Daniel Briere
Contributing Editor

Recent advancements in calling card services are making calling cards easier to use and more versatile. The trend is to integrate different functions in one card — as is the case with the AT&T Universal Card — making a user's calling card an access mechanism, or a key, to the carrier's entire line of services.



In the future, the integrated calling card will be the standard, although separate numbers might still be used to access various services. Using a facsimile network card, a virtual network card and a stand-alone calling card will eventually be passe.

Users have been familiar with calling cards for some time. They're known by many different names — call-

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Groups say AT&T withheld some access charge savings

ICA, consumer groups say AT&T hasn't passed all savings to users under price cap regulations.

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — Leading user and consumer groups last week said they believe AT&T is withholding between $182 million and $321 million in savings from access charge reductions that should have been passed on to customers through lower long-distance rates.

The International Communications Association (ICA), the Consumer Federation of America and the National Association of State Utility Consumer Advocates have filed a complaint with the Federal Communications Commission asking the agency to modify its accounting rules to make it easier to monitor AT&T's finances under price caps.

They asked that AT&T be required to show exactly how it computes the price cap ceiling. The complicated price cap formula is based on inflation and other factors such as tax changes or access charge reductions.

The groups claim AT&T does not submit enough information for observers to determine whether cost changes such as lower access charges are being fully passed on to consumers.

In July, the FCC told the regional Bell holding companies to lower access charges for special and switched access by $1.1 bil-

(continued on page 46)

Frame relay, fast packet not suited for all LAN users

Some users may be better off with T-1, T-3 links.

By Jim Brown
Senior Editor

Frame relay interface and fast packet switching technologies may not be a panacea for all users, even though many vendors and analysts tout them as advanced methods to interconnect remote local-area networks.

Because equipment based on these emerging technologies better utilizes backbone circuits than existing circuit and packet switches, frame relay and fast packet switching will benefit users that want to connect LANs over integrated T-1 backbones supporting a variety of other traffic, including terminal-to-host data as well as packetized voice, analysts said.

Frame relay-based virtual data services currently being developed by carriers can also prove beneficial to users that need alternatives to current leased-line services.

But users that simply want to provide high-speed links between remote LANs may be better off installing fractional T-1, full T-1 or even T-3 circuits between remote locations, analysts said.

"In the short term, most people who need to do LAN internet-

(continued on page 6)

Protests delay passage of NIU Forum's ISDN profile

By Ellen Messmer
Washington Correspondent

GAITHERSBURG, Md. — The North American ISDN Users' (NIU) Forum last week indefinitely postponed a vote on a key ISDN application profile due to protests by one member.

The setback for the profile, which is a blueprint of Integrated Services Digital Network applications that forum members drafted for implementation by carriers and vendors, will delay the applications' availability and ultimately slow the arrival of products and services to users.

The forum's Incoming Call Management Application Profile, which was slated for a vote of approval, represents the first four proposed ISDN applications developed by forum members that carriers had agreed to implement.

Those ISDN applications would consist of Call Transfer with Associated Data Application Process, Call Delivery with Associated Data Application Process, Callback on Busy/Abandonment Application Process and Terminal Connectivity Application Process.

They would enable customer service agents to ask a caller for a service number and input it into a terminal connected to a host application. Via ISDN, the caller identification number could also be transferred to the host, which

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Briefs

LAN ho! IBM is expected next week to announce enhancements to its Application System/400 minicomputer line that will give users increased options for attaching the machine to local-area networks. IBM will announce its first native Ethernet interface for the AS/400, as well as its first 16M bit/sec Token-Ring interface for the minicomputer, according to industry observers. The Ethernet board is expected to be based on the same interface IBM offers for its 9370 minicomputer.

IBM is also expected to add new models to the low end of the AS/400 and the AS/Entry line. Announced last September, AS/Entry is a minicomputer based on IBM's System/36 architecture.

RBHCs get Greene light. U.S. District Court Judge Harold Greene last week removed the final obstacle to Bell Atlantic Corp. and Ameritech's purchase of the state-owned carrier Telecom Corp. of New Zealand, Ltd. by approving the two regional Bell holding companies' request to provide international service to the U.S. through the New Zealand carrier. Greene stipulated that the U.S. carriers must operate New Zealand Telecom as a separate subsidiary. In addition, they may not own more than 10% of international cable and satellite facilities carrying traffic to the U.S., nor can they market New Zealand Telecom services in the U.S. Greene added that the RBHCs must use American carriers to terminate traffic to the U.S. and must not discriminate between American carriers when providing service.

Microsoft ships Unix LAN Manager. Microsoft Corp. last week began shipping LAN Manager for Unix Version 1.1 (formerly known as LAN Manager/X).

LAN Manager for Unix, which was codeveloped by Microsoft and Hewlett-Packard Co., is a network operating system for Unix servers that support DOS- and OS/2-based personal computers.

With Version 1.1, network administrators can remotely manage LAN Manager for Unix servers from OS/2 personal computers utilizing a Microsoft Windows-oriented screen interface. Users can also execute server applications remotely and view, copy or delete server files, regardless of whether the files follow Unix or DOS naming conventions. Version 1.1 supports 70 new application program interfaces to integrate configuration, file, server, printer, interprocess communications, error logging and statistics services into applications.

HP offers NewWave applications. Hewlett-Packard Co. last week unveiled three new server applications under its HP NewWave Office umbrella. Workstations running HP NewWave's graphical user interface can access them across a local-area network.

HP NewWave Mail will enable HP NewWave users to exchange messages in addition to text files and spreadsheets; it costs $195. HP AdvanceLink for HP NewWave is terminal-emulation software that enables DOS-based microcomputers running HP NewWave to transfer files to and from HP 3000 and HP 9000 systems; it is priced at $299. HP OfficeFax, which costs $6,000, enables HP NewWave users to send files directly to a facsimile gateway on an HP NewWave server, which then transmits the file to a remote CCITT Group III facsimile machine.

Citicorp taps into fast packet. Citicorp Information Resources last week announced it has installed a T-1 network based on Codex Corp. 6290 fast packet T-1 multiplexers for its Galaxy 2000 Credit Union System, a service bureau for credit unions. The T-1 backbone, which was cut over Aug. 1, links independent credit unions to Citicorp's data center in Troy, Mich., and promises to support data traffic growth into the next century. Two major switching nodes are located in Troy and Arlington Heights, Ill.; six regional nodes are scattered across the country. The network, based on T-1 circuits from MCI Communications Corp., will provide redundant data paths and automatic rerouting around failed nodes or links. According to Citicorp, the network will identify problems before they occur and reroute traffic before service is interrupted.

Deeply committed. Ingres Corp. last week announced Release 6.3 of its Ingres/Star distributed data base management system, which includes support for a two-phase commit protocol. The two-phase commit feature will enable programmers to use a single command to build Ingres/Star applications that can update data records stored in multiple local or remote data bases.

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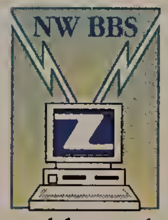

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IEEE stands behind 16M bit/sec token-ring standard

Says standard not flawed, urges better testing.

By Laura DiDio
Senior Editor

Recent reports that the IEEE standard for 16M bit/sec token-ring networks is flawed and will have to be rewritten are inaccurate, members of the IEEE 802.5 committee told *Network World* last week.

The reports arose last month after Madge Networks, Ltd. recalled nearly 1,000 16M bit/sec token-ring adapters following user complaints that the adapters suffered from "jitter" problems, resulting in a high rate of data errors on networks with more than 15 nodes ("Madge Networks recalls faulty token-ring adapters," *NW,* July 2).

At the time, Madge Networks President Robert Madge attributed the problems to an unknown flaw in one of two chips in Texas Instruments, Inc.'s 16M bit/sec chipset. At an IEEE 802.5 meeting in mid-July, other vendors complained of similar problems with TI's Falcon chip and voiced concern that the 802.5 specification was too broadly worded to enable vendors to design reliable and interoperable 16M bit/sec token-ring adapters.

In the wake of that meeting, reports claimed that the specification might have to be rewritten and 16M bit/sec adapters based on the current specification would be incompatible with those based on a revised version of the IEEE 802.5 specification.

Members of the IEEE 802.5 committee labeled those reports "totally false."

"The reports have been overstated. There's no need for the specification to be rewritten or undergo a major revamping, and users aren't looking at major incompatibility problems," said Colin Mick, a member of the IEEE 802.5 committee and executive director of the Open Token Foundation. "In fact, since we know that a problem exists, vendors are being more vigilant with their testing and, if anything, users will benefit from all this scrutiny by seeing superior-quality 16M bit/sec token-ring adapters."

IEEE 802.5 committee members and TI executives said the Falcon chip, which complies with the IEEE specification, is at the root of some adapter problems because its performance appears to be affected by other components on the adapter.

However, Mick acknowledged that the IEEE 802.5 committee may fine-tune the portion of the standard that defines how data packets move from workstations onto the network.

"The idea is to make it more precise so there's nothing left to chance, and engineers get step-by-step guidelines," Mick said.

His statement was echoed by Al Marshall, a vice-president and cofounder of token-ring adapter manufacturer Proteon, Inc. who is heading the IEEE 802.5 volunteer group to assess the scope of the problem.

"The standard is complete as it now exists — it was written to give engineers a lot of freedom when designing an adapter. The caveat, though, is that it must be read carefully and understood in order to design a reliable and interoperable 16M bit/sec token-ring adapter," Marshall said.

Besides Madge Networks, the only third-party firms shipping 16M bit/sec adapters are Proteon and Olicom USA in Plano, Texas. IBM has a proprietary design that employs its own chips and has shipped more than 1.5 million 16M bit/sec adapters in the last year.

One thing that everyone agrees on is that the way around the problems is extensive testing.

Marshall said Proteon has been testing 16M bit/sec adapters using the TI Falcon chip in large nets of over 200 nodes and will begin shipping a product "in the next few months."

Max Jensen, Olicom's vice-president of U.S. sales and marketing, said that since May, his company has shipped over 1,000 16M bit/sec adapters equipped with TI's Falcon chip with no reports of problems. Like Proteon, Olicom tested its boards in networks of 260 nodes and at a 100-meter distance — the maximum configurations allowable according to the IEEE 802.5 standard.

"We were aware of the potential sensitivity of the Falcon chip to noise, so we designed extra circuitry around the chip to circumvent this problem," Jensen said. "Since the Madge Networks problems surfaced, we went back and, as an extra precaution, added several other components to further insulate the adapter from noise."

The IEEE volunteer task force will present its findings at a meeting hosted by Proteon on Oct. 1 at the Sheraton Tara Hotel in Framingham, Mass.

LAN vendors help resellers meet changing user needs

By Bob Brown
Senior Editor

As local-area networks grow in size and complexity, independent LAN vendors are taking steps to help their resellers meet the changing needs of major users.

Unlike systems vendors such as IBM that maintain direct sales and service forces, independent LAN vendors rely primarily on resellers to market and support their products.

These vendors say that strategy won't change. But they recognize the need to help resellers support users that are moving mission-critical applications — including new client/server applications — onto LANs and linking LANs to other computing resources in enterprise networks.

In recent months, independent LAN vendors have moved to give resellers greater technical support and education.

"It would be good to see LAN vendors help resellers bolster their ability to support large networks," said Christopher Cleveland, systems engineer at Arco Pipe Line Co. in Independence, Kan., which buys its LAN equipment from a reseller and gets service from Novell, Inc. "A lot of the dealers can support an eight- or 10-node network, but when it gets bigger, you have problems."

"The key issue for LAN vendors is to make sure that whoever is reselling their products understands that they need to do more than just sell a box and some software," said Hilly Fuchs, director of information systems development at Continental Grain Co., a longtime Banyan Systems, Inc. VINES network user based in New York. "There are a lot of connectivity issues that resellers need to understand."

While some customers deal directly with Banyan for sales and support, the LAN maker's "clear direction is to encourage customers to go through the reseller channels," said James D'Arezzo, Banyan's vice-president of marketing. More than 80% of Banyan's revenue comes from resellers, he said.

"Users should have as much confidence in going to a reseller as in going to us," D'Arezzo said. "It's not as if we hand off a box of VINES to the reseller and say good-bye. We forge a close partnership with our resellers."

Last month, Banyan introduced the Banyan Premier Reseller Program, under which the company will reimburse certain resellers for expenses incurred in training, response center automation and other activities that translate into improved customer support.

To qualify as a Banyan Premier Reseller, a company must employ two Certified Banyan Engineers. Banyan last month

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Advanced Logic Research intros line of superservers

Unveils new 386- and 486-based models running NetWare 386, a challenge to Compaq SystemPro.

By Susan Breidenbach
West Coast Bureau Chief

IRVINE, Calif. — Advanced Logic Research, Inc. (ALR) last week jumped into the superserver market with a line of systems designed for Novell, Inc.'s NetWare 386 and positioned against Compaq Computer Corp.'s SystemPro servers.

The company's new BusinessServer machines are based on Intel Corp. 80386 or 80486 microprocessors running at 33 MHz and feature ALR's minicomputer-like read/write cache architecture. They come in floor-standing chassis and can accommodate up to 10G bytes of internal disk storage.

The servers are less proprietary than Compaq's and NetFRAME Systems, Inc.'s pioneering superservers, which have generated rather lackluster sales thus far. ALR expects its products to have broader appeal.

"We didn't engineer a product and then try to find a market," said Paula Robertson, marketing manager for ALR's Server and Multiuser Systems Division. "Our customers and resellers told us what they wanted, and we built a product for them."

The servers start at $15,000 for an 80386-based model and appear to be priced $1,000 to $5,000 less than a similarly configured SystemPro, although not all features are directly comparable. The BusinessServer has a built-in uninterruptible power supply and monochrome graphics, for example, while the SystemPro has an extra serial port and a video graphics adapter.

ALR's flagship BusinessServer models are based on the Extended Industry Standard Architecture (EISA).

Versions based on IBM's Micro Channel Architecture or AT ar-

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MCI unveils 800 control service, new Vnet features

By Bob Wallace
Senior Editor

WASHINGTON, D.C. — MCI Communications Corp. last week unveiled a service that enables customers to manage 800 services from an on-site workstation and announced new features for its Vnet virtual network service.

MCI's 800 Configuration Management (CM) service allows users to access data bases at MCI central office switches from an IBM 3270 terminal. Using dial-up or dedicated links to the central office, users can add, change or disconnect 800 routing features such as point-of-call, time and day-of-week, and percentage allocation routing.

Customers can select 800 management functions from a menu and key in routing changes, which take effect five minutes later, on average. Users can store and activate as many as 99 alternate routing plans that can be used during a disaster or outage.

CM is available now for a $500 monthly service fee. Dial-up users pay a onetime fee of $500 and a monthly access charge of $30. For dedicated access, the onetime fee is $1,000 and the monthly access charge is $225.

MCI also rolled out a new release of Vnet CM, one of six applications comprising MCI's Integrated Network Management System, that supports new features.

An 800 Remote Access Feature enables employees to use an 800 number to access a Vnet when they are away from their company and place seven-digit calls to any on-network location.

Point of Call Routing promises savings for users with hybrid private-line/Vnet systems. MCI routes calls from Vnet sites to the nearest access point in a customer's private network so that calls can then be routed over private facilities to reduce Vnet usage costs.

MCI's new Customized Announcements enables customers to personalize standard network announcements and recordings for use in specific situations.

The software's Direct Termination Overflow feature has been enhanced so that when calls over a dedicated access line to a Vnet site cannot be completed, they can be overflowed to any site served by switched or dedicated facilities.

In addition, MCI said its has reduced from three days to one the time needed to provide sites with switched access to Vnet and said customers can receive new 800 numbers for special promotions in less than a day.

Correction: Due to a printing error, pages 22 and 34 were swapped in last week's issue. We apologize for any confusion.

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MacWorld attendees seek Mac-to-PC LAN connections

Want a delivery date for Macintosh System 7.0.

By Laura DiDio
Senior Editor

BOSTON — Attendees at last week's MacWorld Expo/Boston show here were looking for products that integrate Macintoshes into existing local-area networks.

Users were especially interested in new adapters, gateways and groupware packages that link Macintoshes to personal computer LANs (see "Net packs unveiled at MacWorld Expo," page 27).

Show attendees were also looking to Apple Computer, Inc. for a delivery date for Macintosh System 7.0, the long-awaited release of the Macintosh operating system.

While Apple executives have steadfastly refused to offer a release date for System 7.0, sources close to the company who asked not to be identified said it is due out in January.

Built-in IPC facility

System 7.0, which has been in development for more than 18 months, will have a built-in interprocess communications (IPC) facility to exchange data between programs, new data base access capabilities and other communications features that can be used to create distributed client/server Macintosh applications.

The communications functions are part of Apple's Inter-Applications Communications Architecture, which is woven into the System 7.0 operating system.

System 7.0's InterApplications Communications IPC is analogous to Microsoft Corp.'s Named Pipes mechanism in OS/2 LAN Manager. It allows applications to exchange data either within a single Macintosh or over a LAN.

Peer pressure

While the show was heavily attended, traffic was especially brisk at the Novell, Inc. and Digital Communications Associates, Inc. booths.

John Perkins, Novell's product manager for its NetWare for Macintosh software, said, "The questions I'm being asked most frequently are how can Macs integrate and work together with PCs, and how can Macintoshes operate as peers in a Novell network."

Typical among these users was Peter Bartram, president of SMC Publishing Corp. in Hartford, Conn. Bartram, who has both Macintoshes and personal computers at his firm, asked Novell product managers which network adapters offered the best performance and value.

Perkins recommended Novell's own adapters as well as those made by 3Com Corp.

Bartram also wanted his Macintoshes and personal computers to be able to access AppleShare and NetWare servers.

Perkins told him Apple's AppleShare PC software package enables personal computers to access AppleShare servers but added that, at this time, there is no package available that will allow Macintosh users to simultaneously access NetWare servers.

Macs on NetWare token ring

Other users browsing through the Novell booth were pleased to learn that one of the biggest Macintosh networking impediments — support for Macintoshes on NetWare token-ring nets — has now been solved.

Novell said it recently became the first company to ship token-ring adapters equipped with software drivers that enable Macintoshes to participate as full peers on Novell NetWare token-ring LANs.

At DCA's booth, Tom Lenahan, the company's senior product manager in the Macintosh Business Unit in Alpharetta, Ga., said his company was seeing "many more corporate network users [at this show] than at previous shows."

"Two or three years ago, it was a problem to integrate Macs into PC networks, but that's changing now."

Polaroid uses Apple's DAL to build links to data base

By Jim Brown
Senior Editor

CAMBRIDGE, Mass. — Polaroid Corp. last week said it has improved its customer service operations by using Apple Computer, Inc.'s Data Access Language (DAL) to build links to a remote data base, enabling agents to access data quickly to resolve customer inquiries.

The effort has helped Polaroid vastly improve customer service by using DAL in conjunction with other software to automate the antiquated manual process of retrieving dealer and product data from company literature.

"Historically, we had to have customer service agents act as walking encyclopedias that know all the ins and outs of all the different films and cameras," said Tim Crawford, formerly an information systems manager who oversaw the project and currently Polaroid's software development manager.

But now, any of the 30 agents at the company's customer service center here can click a mouse within either of two Apple Hypercard applications supported by DAL. By doing so, they can quickly gain access to information needed to answer customer questions about dealers. They can also more easily collect statistics about the calls coming into the customer service center.

Polaroid was a beta site for DAL, formerly called CL/1, which shipped last December.

The company built DAL routines into two Hypercard applications that link agents' Macintosh SEs to a Digital Equipment Corp. VAX in Waltham, Mass. The VAX runs Ingres Corp. data base management system software. One application enables agents to retrieve dealer information from the VAX and read it to a caller.

The other application lets agents directly log customer complaints and information about the nature of a call into an Ingres data file. That information provides Polaroid with the statistical data needed to streamline customer service.

Agents can also use Macintosh-based terminal-emulation software to access product bulletins stored in a VAX-based text library. These bulletins help agents ascertain possible causes for product problems and ways to overcome them.

In the past, agents had to log caller information manually and refer to hard-copy dealer listings. To look up product bulletins, they had to refer to a three-ring binder Polaroid called its product bible.

"Oftentimes, agents would take a short way out and tell the caller 'I don't know' or give the customer information that wasn't entirely correct," Crawford said.

Hypercard and DAL enabled programmers to build easy-to-use applications in which agents use a mouse to point and click on icons to issue commands or enter data, he said.

Programmers simply use an application program interface to pass data the agent collected from customers and requests for dealer information from the Hypercard application to DAL client software on the Macintosh. That client software formats the customer data and dealer information requests into standard ANSI SQL routines, which are then routed over dedicated circuits to the DAL server software on the VAX.

The server software converts the ANSI SQL routines into the SQL syntax used by the Ingres DBMS, which then either stores

(continued on page 45)

Technologies not for all users

continued from page 2

working will find the preferred path is to use bridges or routers linked via private lines," said Tim Zerbiec, vice-president of technology at Vertical Systems Group, a technology management consulting firm in Dedham, Mass.

But others pointed out that this approach is expensive. "You'll get great response time, but it's a question of economics," said Mark LaRow, a consultant with Network Strategies, a network consulting practice of Ernst & Young in Fairfax, Va. "How much do you want to pay for that response time?"

Since most users need to transport a mix of data, they will find it difficult to cost-justify building a network solely dedicated to LAN traffic. "If you look at most big companies, they've all got some type of traffic other than LAN interconnection traffic," said John McQuillan, president of McQuillan Consulting in Cambridge, Mass.

The frame relay interface is a mix of emerging ANSI, Consultative Committee on International Telephony and Telegraphy and Integrated Services Digital Network data-link layer standards that will eventually replace the host of standards that make up X.25, analysts said. Frame relay will be implemented on such products as LAN bridges and routers, as well as T-1 multiplexers.

Frame relay drastically reduces the protocol processing overhead inherent in X.25 and is well suited for routing LAN traffic, which is broken into packets that are transmitted in large bursts.

Frame relay speeds up the process of routing packets through a series of switches to a remote site by eliminating the need for each switch to check each packet it receives for errors before passing it to the next switch in line. Instead, only the switch that receives a packet from a sending device and the one passing it to the receiving device check for errors.

Frame relay will also enable users to set up permanent virtual circuits between locations by ensuring that the multiple packets a file has been broken into are passed over the same circuit path from one LAN to another. This creates a fixed path through the network and means a file can be reassembled quickly by the receiving device.

Current X.25 virtual circuits, by contrast, often route packets over a mix of different circuits, which means packets are received out of order. This forces the receiving device to reorder the packets before the file can be reassembled, thereby chewing up processing power.

Frame relay will work very nicely with fast packet switches, analysts said. These switches employ statistical multiplexing techniques that use a circuit's entire bandwidth to switch fixed-length packets more quickly than X.25 switches or circuit switches do.

A frame relay interface on a bridge, router or T-1 multiplexer can provide access to fast packet switches. Those switches can be housed within a T-1 multiplexer that supports a private fast packet net or at a carrier's central office.

Even though fast packet switches can support non-frame relay traffic, the two technologies together promise to increase throughput between locations with large amounts of bursty traffic. But it may be overkill for users with few locations and little traffic.

"If all you want to do is connect two LANs, there is no reason not to dedicate a T-1 to that," said Steve Taylor, principal with Distributed Networking Associates, a telecommunications planning and research firm in Greensboro, N.C.

But users with a mix of other traffic will be better off replacing T-1 networks that use time-division multiplexing (TDM) with frame relay and fast packet technologies. The drawback to TDM is that users must slice the T-1 circuit into individual channels, each supporting transmission of a specific form of data such as LAN traffic or terminal-to-host traffic. Since that bandwidth is allocated to only one form of traffic, it remains idle when a transmission is completed.

"What frame relay and fast packet give you is the ability to optimize the circuit," said Mary Modahl, an analyst with Forrester Research, Inc. of Cambridge, Mass. "You can jam more data over the same line because fast packet optimizes the line better than circuit switching does." Forrester Research recently published a report detailing when vendors will implement both frame relay and fast packet switching.

Users with dedicated LAN links today need to examine traffic loads to determine if frame relay and fast packet will be beneficial. Users with little LAN interconnection traffic may be better off carving out a 64K bit/sec circuit on a TDM-based T-1 multiplexer, while those with higher volumes may want to replace TDM multiplexers with ones supporting fast packet and frame relay, Modahl said.

But since there are few products or services that support the technologies on the market today, it is impossible to say at what point one technique becomes more economical than the other.

Zerbiec, however, said frame relay and fast packet may become more practical for users that currently link LANs over dedicated circuits once carriers offer services that are based on frame relay.

Users turn to token ring to network FEPs

continued from page 1

number of connections and components, according to David Woodward, director of network systems at TRS.

Using the Token-Ring Network also frees up the eight V.35 ports on each 3745 that were required for hard-wired connections to other front-end processors. (A 3745 can support a maximum of 32 V.35 ports.) In addition, it increases throughput between 3745s, which had been linked at speeds ranging from 56K to 256K bit/sec.

Woodward said TRS is considering implementing dual Token-Ring Networks for greater reliability. IBM's TIC cards support connections to two LANs. "If one ring fails, you can roll over to the other," Woodward said.

The 4M bit/sec Token-Ring, which will soon be migrated to a 16M bit/sec LAN, also simplifies the process of adding 3745s to the data center. The 3745's Network Control Program requires users to define physical connections and paths that will be taken to reach other 3745s. "Now you just assign one logical line and poke it into the ring," Woodward said.

IBM's experience

IBM Data Communications Services, which operates IBM's Corporate Consolidated Data Network (CCDN), is implementing Token-Ring LANs to connect 3745s in 32 mainframe sites, according to Fred Pelletier, advisory telecommunications analyst at Data Communications Services.

CCDN has roughly 120 sites with 3745s that combine terminal traffic from remote offices and feed it to 26 concentration sites, each with a 4381 mainframe and multiple 3745s. The concentration sites relay traffic to six backbone nodes equipped with 3090 mainframes and multiple 3745s. The 3745s in the backbone nodes function as gateways to applications running on processors in other IBM facilities.

The local 16M bit/sec Token-Ring connections between 3745s at CCDN concentration and backbone sites serve as alternates to host channel attachments.

In the past, a 3745 needed to pass data through the host to another 3745 acting as an application gateway. If the host went down, communications could not continue. Now, once the host has established a communications session, data can flow from one 3745 to the gateway 3745 over the Token-Ring, taking the host out of the loop.

Conversely, if a TIC fails, the 3745s can still communicate through the host.

Better response time

Response time also improved with the implementation of the Token-Ring. Passing data from one 3745 to another through the host introduced a slight response time delay. The response time improvement is minor because of the high speed of the IBM host channel and the host processing speed, IBM said.

Network uptime can also be improved by linking 3745s on a Token-Ring because users can assign the same Token-Ring Network address to TIC cards in multiple 3745s, according to Wayne Smith, computer scientist at Northeast Utilities, which is testing Token-Ring connections for two 3745s in its Wethersfield, Conn., data center and a single 3745 at its backup data center in Berlin, Conn.

The two data centers will be connected with Token-Ring source-routing bridges.

Assigning the same address to multiple TIC cards enables a user to access a host through any of the 3745s. "Before, if I was served by one 3745 and it failed, I'd be down," Smith said. "Now, if one fails, I'll be rerouted through the other 3745 to the host."

Assigning duplicate Token-Ring addresses could also help in a disaster recovery situation by automatically sending data to a backup data center if the primary data center experiences a failure.

In Northeast Utilities' disaster recovery testing, data destined for the Wethersfield data center is automatically rerouted to the Berlin data center by assigning duplicate addresses to TICs in both sites.

One shortcoming cited by users is the need for more sophisticated network management tools for the Token-Ring Network.

For example, Token-Ring Network Trace and Performance Adapter, IBM's tool for performing data frame and packet analysis, lacks an interface to IBM's NetView, which forces users to monitor LAN performance from a Personal Computer on the LAN, rather than being able to view it from a NetView console.

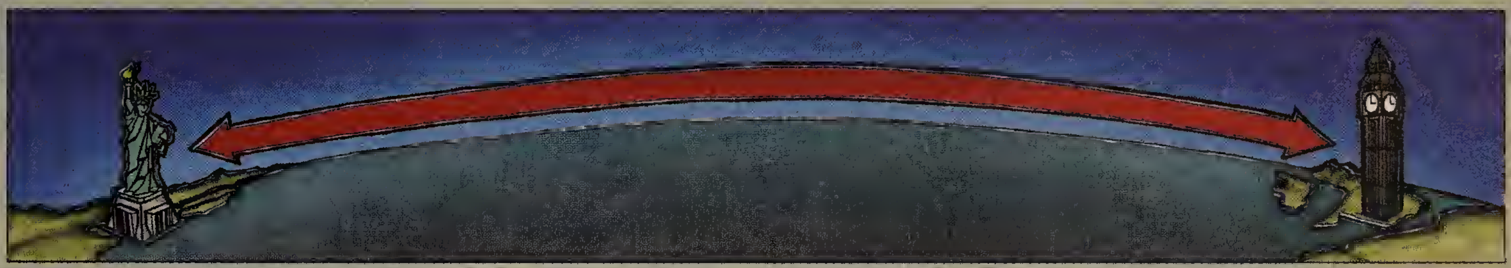
Another IBM LAN management product, LAN Manager Version 2.0, acts as a NetView service point, collecting information about the LAN and accepting NetView commands, such as commands to disable specific devices.

But LAN Manager Version 2.0 does not enable users to optimize the LAN for performance from a NetView console. IBM has acknowledged shortcomings in the product ("Vendors admit they need to improve LAN control tools," *NW,* June 25).

"We'd like to be able to perform LAN management from a central site, be it through NetView or whatever," said Robin Layland, engineering consultant in network engineering and telecommunications for The Travelers Corp., which is currently testing 3745-to-3745 Token-Ring links in its data centers.

TRS also would like to see an integrated tool for measuring LAN performance data.

"We're working together with IBM to come up with a better solution," Woodward said. ◘



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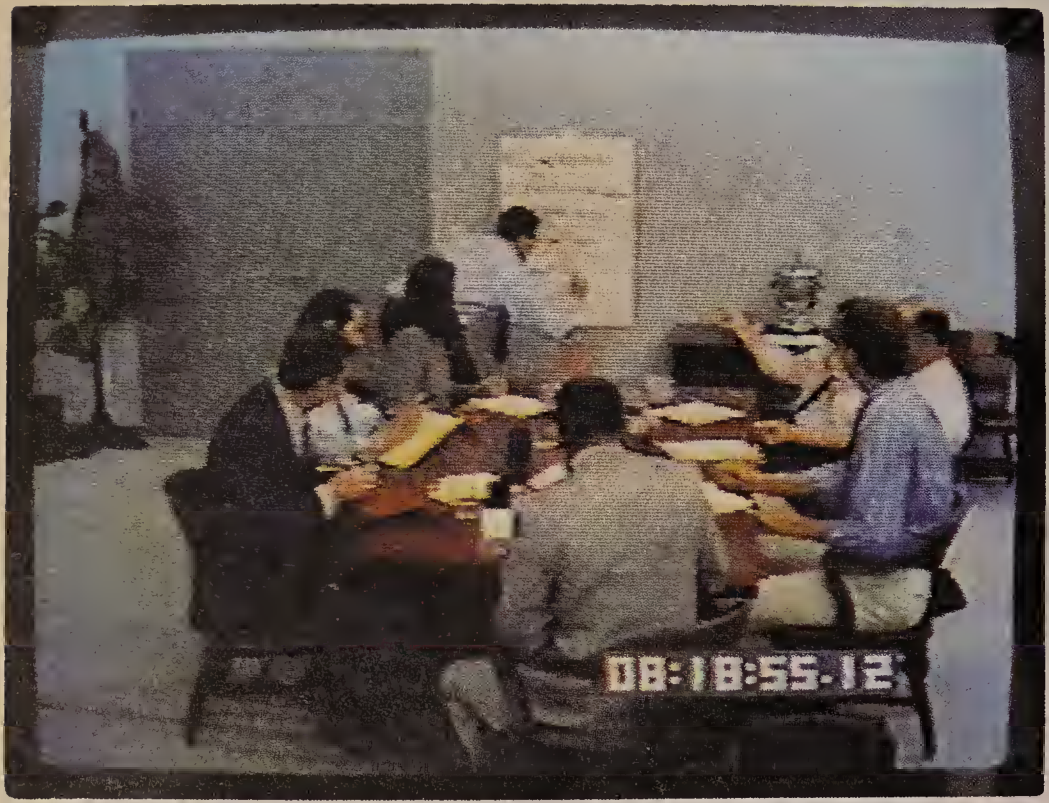

"We've got plenty of data... the challenge is to put it in the hands of decision makers in a form they can use. The perfect PC would be an ideal client to all my information systems."

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"Macintosh? No kidding?"

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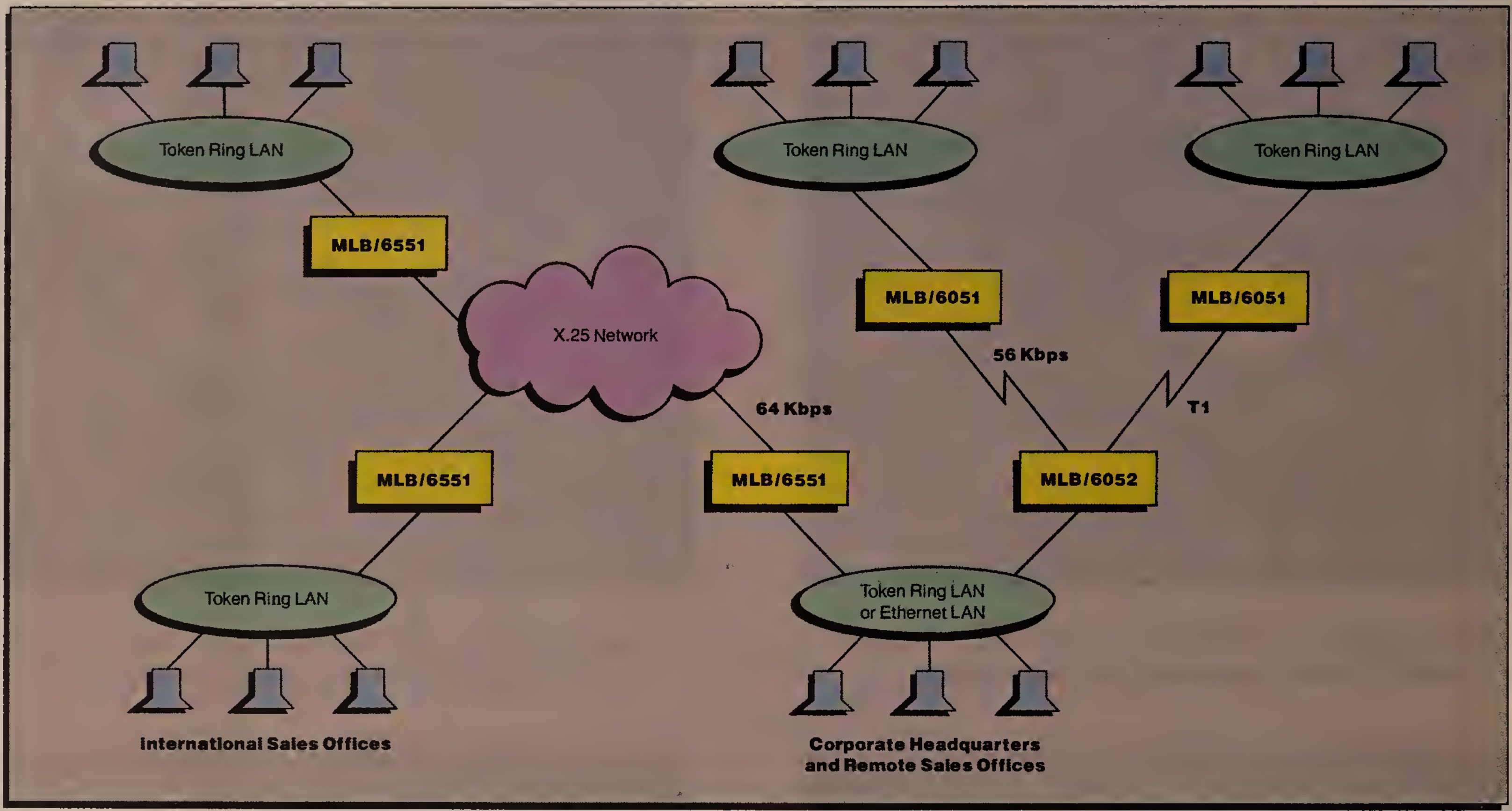

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See The FAXNeT Form on Page #14

INDUSTRY UPDATE

VENDOR STRATEGIES, MARKET TRENDS AND FINANCIALS

Worth Noting

Only half of the 20-plus T-1 multiplexer vendors in the market today will survive the 1990s, according to International Data Corp. (IDC), a Framingham, Mass.-based market research firm. Survivors will be characterized by significant installed bases, high-speed networking interfaces, and strong service and support operations, according to IDC.

People & Positions

Jack MacAllister, who has headed **US West, Inc.** since the regional Bell holding company was formed in 1984, recently announced plans to retire as chief executive officer, effective Dec. 31.

MacAllister will remain chairman of the board. In that position, he will continue to act as a US West spokesman.

Richard McCormick, US West's president and chief operating officer, was elected by the company's board of directors to succeed MacAllister as president and CEO, also effective Dec. 31.

Of the original chief executives of the seven RBHCs, only two remain — **John Clendenin** of BellSouth Corp. and **William Weiss** of Ameritech.

H.P. Scott last week was named president of **Western Union ATS, Inc.**, a wholly owned subsidiary of **MCI Communications Corp.**

Scott will coordinate the subsidiary's provision of network interconnections for MCI's long-distance operations in and around metropolitan areas.

The subsidiary was formed recently, when MCI acquired the business from Western Union Corp.

Previously, Scott was vice-president of transmission systems construction for MCI.

User demand prompts HP to sign new service affiliate

ACC union to aid users with net fault resolution.

By Ellen Messmer
Washington Correspondent

MOUNTAIN VIEW, Calif. — Hewlett-Packard Co. recently expanded the stable of vendors under its HP Network Support Affiliate Agreement by signing Advanced Computer Communications (ACC) as a service partner.

The agreement enables HP and ACC to coordinate fault-isolation procedures for mutual customers' networks.

Until now, HP had signed 11 other companies, predominantly larger computer and network suppliers, to its affiliate program. Demands from customers prompted HP to sign on ACC, a Santa Barbara, Calif.-based manufacturer of bridges and routers.

Show of support

HP's Network Support Affiliate Agreement members

Advanced Computer Communications
AT&T Paradyne
Chipcom Corp.
Dynatech Communications Division
Equinox Systems, Inc.
Gandalf Technologies, Inc.
Micom Communications Corp.
Network Equipment Technologies, Inc.
Northern Telecom, Inc.'s Meridian Communications Systems
Siecor Corp. Electro-Optic Products Division
Timeplex, Inc.
Vitalink Communications Corp.

SOURCE: HEWLETT-PACKARD CO.
GRAPHIC BY SUSAN J. CHAMPENY

Under the program, the two companies will establish technical and administrative contacts with each other to prepare for problem resolution in advance and maintain the right to call into the other company's response center as well as run diagnostics.

This type of agreement will prove beneficial to customers with HP NetAssure maintenance contracts, which guarantee that HP and its affiliates will cooperate to resolve a network outage.

Taia Ergueta, manager of HP's Multivendor Support Program, said Network Support Affiliate Agreements cover all of the products in each vendor's line. But she noted that the relationship is still one of independent contractors to a mutual customer; affiliates do not take responsibility for one another's products.

Dan O'Halloran, data networking specialist for the San Juan School District in Carmichael, Calif., said he refused to purchase HP and ACC products

(continued on page 12)

INDUSTRY BRIEFS

The boards of directors for **GTE Corp.** and **Contel Corp.** last week definitively agreed to a $6.2 billion merger through a stock swap. GTE agreed to exchange 1.27 of its common shares for each of Contel's 159 million outstanding shares under a preliminary agreement announced July 12 ("GTE/Contel merger shifts power balance," *NW,* July 16).

The merger must still be approved by both companies' stockholders, who will meet in the fall, and by various regulatory agencies. The deal is expected to be closed by year end. The merger will create a new company with a market value of $25 billion, according to a statement from GTE.

AT&T has agreed to increase its stake in **Sun Microsystems, Inc.** to 14.7% by spending $191.8 million for an additional block of newly issued stock equal to nearly 5% of Sun's 92.7 million outstanding common shares. The sale of an additional 4.6 million shares to AT&T will provide Sun with working capital.

The sale is expected to be completed in 30 days. Under a 1988 agreement, Sun has the right to sell to AT&T newly issued shares in an amount up to 15% of Sun's outstanding common stock. Also, AT&T has the option to buy another 5% stake in Sun through open market purchases by Jan. 1.

Lotus Development Corp. last week announced a cost-cutting program that includes layoffs of as many as 40 employees — about half of them in marketing areas — and a companywide hiring freeze.

While the number of layoffs is small relative to Lotus' 3,100-

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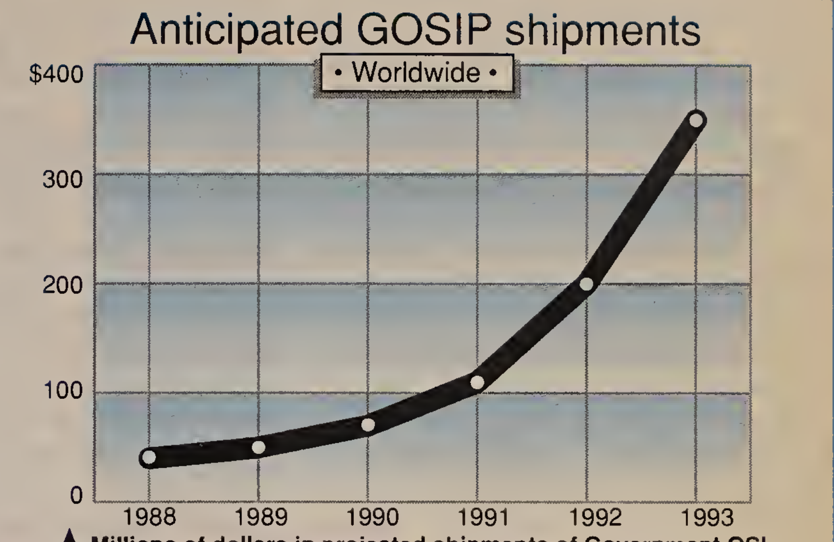

▲ Millions of dollars in projected shipments of Government OSI Profile products

GRAPHIC BY SUSAN J. CHAMPENY SOURCE: VENTURE DEVELOPMENT CORP., NATICK, MASS.

Vendors jockey for spot in GOSIP mart

As mandate goes into effect, vendors scramble to be front-runners in soon-to-be billion-dollar mart.

By Ellen Messmer
Washington Correspondent

WASHINGTON, D.C. — When the Government Open Systems Interconnection Profile (GOSIP) mandate goes into effect this week for procurement specialists in federal agencies, some network vendors will be better prepared to support the call for products than others.

Digital Equipment Corp. and Hewlett-Packard Co. have overhauled their net architectures to fully support OSI protocols, and each wields a full line of applications to lure government users and grow their market share.

Other companies, such as IBM and local-area network vendor Novell, Inc., have promised to support GOSIP but are still working to bring GOSIP-compliant applications to market.

Still, niche companies — such as Retix and Touch Communications, Inc., both specialists in OSI products — will offer a complete line of GOSIP products to fill the gaps other vendors leave.

"We're happy GOSIP is coming into force," said Mikael Johansson, HP's OSI marketing program manager. "With this specification, the whole market opens up for us."

Many vendors are scurrying to get off to an early lead in the market, which potentially could reach $1.1 billion in 1993, according to Venture Development Corp., a Natick, Mass., research firm (see graphic).

Under GOSIP Version 1, vendors must supply government users with X.400 electronic mail, File Transfer, Access and Management (FTAM) software, X.25-based wide-area networking products, as well as LANs that support the IEEE 802.3, 802.4 and 802.5 standards.

DEC, HP and Control Data Corp. are well equipped for Version 1. DEC's DECnet Phase V product family, which will ship later this year, is a key part of DEC's GOSIP strategy. DECnet Phase V will let users continue using DECnet Phase IV while permitting communications with other OSI systems.

Steve Kelly, DEC's GOSIP marketing manager, said DECnet Phase V will integrate OSI into DECnet by replacing the physical, data, network and transport layers of Phase IV with GOSIP-compliant protocols.

In addition, the vendor already offers X.400 software, FTAM and support for a variety of LANs specified under GOSIP.

> "With this specification, the whole market opens up for us," Johansson said.

▲▲▲

HP offers X.400 and FTAM software, and it supports X.25 and LANs specified under GOSIP. The company has even demonstrated OSI interoperability with numerous vendors in its lab. HP's FTAM product has passed interoperability tests with products from Computrol, Inc., Data General Corp., DEC, Retix and Unisys, while its X.400 offering passed tests with 11 other vendors, including Sun Microsystems, Inc.

(continued on page 12)

Vendors jockey for spot in GOSIP mart

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Unisys Corp., which depends on sales to the government for a large portion of its revenue, has a full line of products for GOSIP Version 1, plus an X.500 directory services software product.

"But we still have some work to do on the Virtual Terminal Protocol," said Phil Wimpenny, program development manager for OSI products at Unisys. VTP will allow terminals and hosts to communicate with each other without one side knowing the terminal characteristics handled by the other side.

3Com Corp. has an X.400 gateway that will ship in October. 3Com is promising it will have FTAM, now in beta test, for DOS workstations in the first quarter of 1991; however, it is already marketing asynchronous communications servers to support VTP and End System-Intermediate System routing products to satisfy future GOSIP requirements.

IBM and Novell, both highly successful with proprietary standards, have been slower in preparing for the era of GOSIP.

Only last June did IBM announce it would create products for GOSIP. IBM made an FTAM product available in June, but delivery of GOSIP-compliant X.400 and X.25 products is not due until this December. While IBM says it offers some X.400 and other OSI tools, those products are not fully GOSIP-compliant.

Novell announced a commitment to GOSIP in October 1989, but the company has not delivered any GOSIP-compliant products to date.

While some vendors may lack products, others such as Retix can probably supply the missing pieces. Retix has a full line of both GOSIP Version 1 applications and OSI migration products, which allow integration of OSI and non-OSI networks. Retix also has available products satisfying the virtual terminal and X.500 directory services requirements, which the National Institute of Standards and Technology will specify in future versions of GOSIP.

That's important because many industry observers expect that once federal agencies begin to show benefits achieved by GOSIP, the private sector will soon follow.

Users prompt HP to sign affiliate

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until the two companies agreed to the service arrangement. O'Halloran, who is responsible for implementing a local-area network for the 45,000-student school district, said he values the NetAssure program, particularly because the school system has a limited staff.

The San Juan School District, already an HP customer with the company's StarLAN 10 product and two HP minicomputers installed in the district's central office, decided last year to purchase ACC bridge products. The district eventually will need bridges to connect its various HP LANs.

ACC products offered "the most cost-effective solution," said O'Halloran. However, he did not want to buy the products until he knew HP would support them. "It's a must to have cooperation between vendors," he said.

"Until HP and ACC had come to an agreement, we weren't going to purchase this product," said O'Halloran.

The two vendors reached a verbal agreement on the matter, and O'Halloran went ahead with the school district's purchase earlier this year.

ACC is also in the early stages of discussing a similar agreement with Digital Equipment Corp.

For a smaller company like ACC, such agreements can mean a great deal. "It's going to open up opportunities for us now," said an ACC spokeswoman, adding that a number of contracts could already be traced to the HP agreement.

"It means a lot to the customer that the link between their networks — an ACC product — has the blessing of the network vendor," she said.

Industry Briefs

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member work force, the cost-cutting plan may be a sign that Lotus' management is concerned about the company's outlook, observers said.

Lotus' hiring freeze will allow for a few exceptions, but those hirings must be approved at the senior vice-president level. Among the areas that Lotus will add employees is in sales and support of its Notes local-area network-based groupware product and consulting.

MCI Communications Corp. last week announced the opening of its new, multimillion-dollar, worldwide engineering headquarters in Richardson, Texas.

The facility will house employees responsible for the engineering, design and construction of MCI's worldwide telecommunications network.

These functions previously had been split between MCI's older Richardson facilities and its current Washington, D.C. facilities.

The consolidation of these functions in new engineering headquarters in Richardson has resulted in a transfer of more than 800 jobs, mostly engineering positions. About 600 MCI employees have already relocated or will soon move to the new facility. By year end, the Richardson facility will house about 1,600 workers.

The move is expected to result in better operating efficiencies, said Richard Liebhaber, MCI executive vice-president.

MCI first moved to Richardson in 1978.

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TELECOMMUNICATIONS

CARRIER SERVICES, CENTREX, CPE, WIRING SYSTEMS AND BYPASS

Worth Noting

Carrier revenues from 900 services are expected to rise from $749 million in 1990 to $970 million in 1991 and to $1.425 billion by 1992, according to a recently released report from Strategic TeleMedia, a consultancy in New York.

Carrier Watch

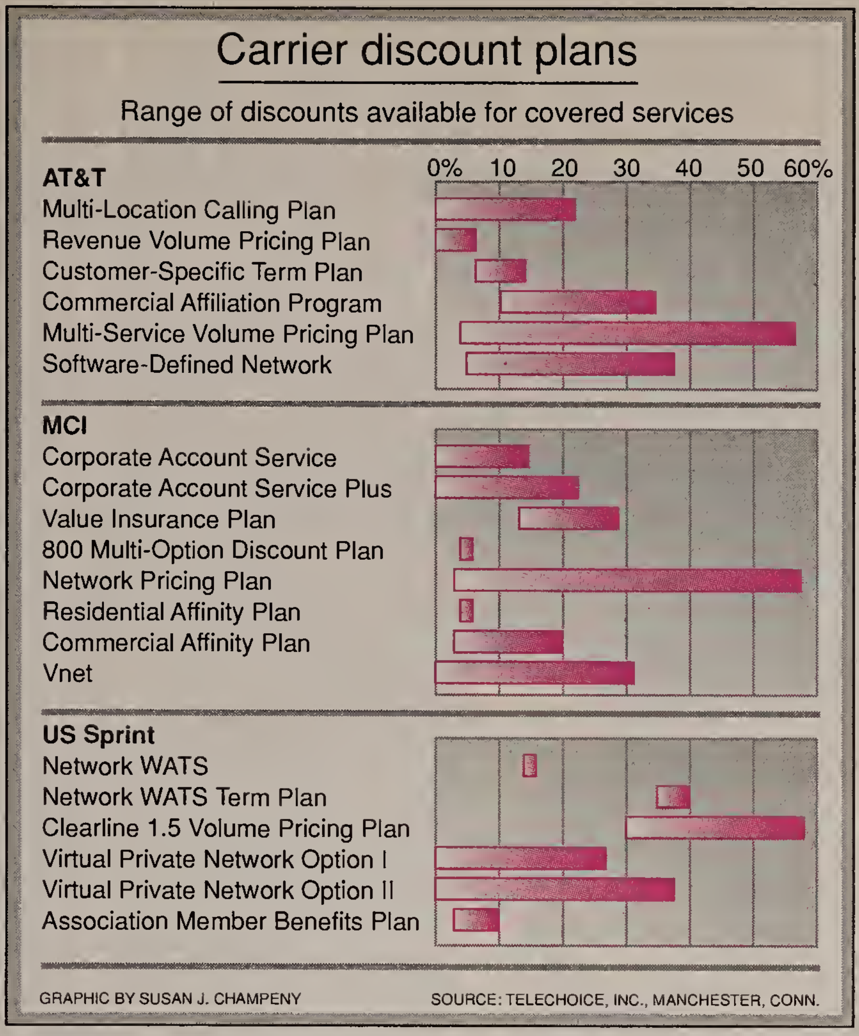
Bell Atlantic Corp.'s The Chesapeake and Potomac (C&P) Telephone Co. filed a plan at the District of Columbia Public Service Commission (PSC) to offer call blocking for its caller identification service.

The PSC recently approved C&P Telephone's caller ID service but ordered the carrier to make call blocking available before allowing implementation. The solution provided by C&P Telephone requires users to call the operator and request a "privacy call." The receiving party's caller ID capability is technically inoperative when a call is routed through an operator. C&P Telephone said it wants to charge 45 cents for each privacy call.

A spokesman said the operator will keep a log of all privacy calls to discourage use of call blocking by obscene phone callers or others who might not want their identity revealed through caller ID.

The PSC has 10 days to respond to the call-blocking proposal.

US Sprint Communications Co. last week said it has upgraded its three Northern Telecom, Inc. DMS-300 switches to DMS-300 SuperNodes, a move that boosts call processing power by 45%. The carrier replaced a Northern Telecom 16-bit NT40 CPU with a 32-bit processor in its international gateway switches in Honolulu, New York and Stockton, Calif.



GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: TELECHOICE, INC., MANCHESTER, CONN.

Discount pricing plans help users trim long-haul bills

Can combine usage from multiple net services.

By Bob Wallace
Senior Editor

Discount pricing plans offered by the top three long-haul carriers can provide hefty savings for users willing to pay monthly subscription fees or other charges, or commit to minimum usage requirements.

Carriers have designed the plans to allow customers to combine usage from multiple services to qualify for discounts they would not be able to achieve individually on each service.

Daniel Briere, president of TeleChoice, Inc., a consultancy in Manchester, Conn., said users should check all carriers' term plans as part of their request-for-proposal process.

"Users should not assume that carrier sales reps are familiar with all available plans," Briere said. "It's the user's responsibility to research the plans."

AT&T became the first to offer multilocation discount plans when it introduced in 1988 its Multi-Location Calling Plan (MLCP) for outbound services and Revenue Volume Pricing Plan (RVPP) for inbound calling services.

Under MLCP, AT&T provides discounts of up to 21% off total monthly interoffice billing for Megacom, Pro WATS and AT&T WATS services (see chart). Users pay a $10 plan installation fee and a monthly subscription fee based on the number of locations.

RVPP provides discounts of up to 6% off monthly usage accrued from AT&T 800, Megacom 800, Readyline, MultiQuest and Dial-It 900 services. Users pay a $1,500 installation fee for the plan. RVPP does not carry a minimum usage commitment or a minimum term length.

AT&T, like its competitors, is trying to increase the number of plans it offers. The carrier was unsuccessful in its June 1990 bid to establish a combined Software-Defined Network (SDN) and 800 service volume discount plan.

The Federal Communications Commission rejected the AT&T SDN-800 proposal because it covered services that are broken into two separate rate baskets under price cap regulations. The carrier and several large corporate users have asked the FCC to reverse its decision.

Rival carriers, including MCI Communications Corp. and US Sprint Communications Co., offer multisite volume discount plans as well.

MCI's Corporate Account Service Plus Option A plan offers users a supplemental discount for each service. The plan covers MCI Execunet, MCI Card, Prism I, Prism II, Prism III and Prism Plus, and MCI WATS services. Users pay a $1,500 monthly subscription fee. The plan carries a minimum one-year term but no minimum usage commitment.

(continued on page 14)

FCC trying to put ONA together again

Starts proceedings to reinstate some Computer III rule changes overturned by California court.

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — The Federal Communications Commission last week took the first major step toward putting its Open Network Architecture (ONA) plan back on track after an appeals court decision in June derailed the agency's Third Computer Inquiry ruling.

The agency opened a formal rule-making proceeding in the hopes that it can reinstitute some of the rule changes invalidated by a federal district court in San Francisco that overturned the FCC's 1986 Computer III decision ("Court strikes down Computer III edict," *NW,* June 11). That decision established ONA and set forth other rules AT&T and the regional Bell holding companies would have to follow if they wanted to move enhanced service offerings out of separate business units and into their telephone operations.

FCC officials have said they believe the court's ruling was more an indictment of the procedures the agency used in establishing Computer III rather than of the plan itself. The court said the FCC had failed to compile enough information to justify eliminating the separate subsidiary requirement for the RBHCs. It also said the FCC had overstepped its bounds by attempting to regulate intrastate enhanced services.

So last week, the FCC tackled two significant Computer III rules it feels were not directly challenged by the court. The FCC proposed reinstating rules requiring AT&T and the RBHCs to move ahead with their ONA plans, which detail how they will open their networks and unbundle services for rival enhanced services providers.

The agency also proposed allowing AT&T to offer enhanced services permanently through its telephone unit. The FCC has already granted a temporary waiver to AT&T that lets it offer existing and new enhanced services

(continued on page 14)

WASHINGTON UPDATE

BY ANITA TAFF

Another Tariff 15 suspension. Following a now well-established pattern, the Federal Communications Commission last week suspended another AT&T Tariff 15 deal for five months to investigate its lawfulness. The deal would have given three users — East Ohio Gas Co., Overseas Military Sales Group and Swift Global Communications, Inc. — each a $7,500 credit for ordering new or additional Megacom service under a three-year term. The offer was scheduled to take effect June 23.

AT&T told the FCC it needed to offer the credit to keep from losing the three customers to rival carriers. AT&T claims US Sprint Communications Co. offered Swift Global Communications and Overseas Military Sales Group a onetime credit of $7,500 for purchasing its UltraWATS service. AT&T also claims MCI Communications Corp. offered East Ohio Gas a $7,500 credit for ordering its Prism I service. The FCC previously has suspended three other Tariff 15 deals for CBS, Inc., La Quinta Motor Inns, Inc. and Resorts Condominium International, Inc. (RCI). RCI's deal was allowed to take effect at the end of the five-month suspension, but the FCC did not rule on its legality. The other two deals are still under suspension. FCC officials are apparently trying to stall a final decision on the question of customer-specific discounts pending completion of a larger proceeding examining AT&T's status as a dominant carrier.

In another blow to its Tariff 15 plans last week, the FCC told AT&T it needs more time to examine credits AT&T is planning to offer to RCI for a five-month delay in having its deal approved. Although the firm is now getting its promised discounts — 10% off outbound Software-Defined Network (SDN) and 8% off inbound remote-access SDN — AT&T said it needs to compensate the customer for the regulatory delay.

Discount pricing plans help users

continued from page 13

US Sprint's Network WATS plan offers a flat 15% discount off monthly usage accrued from its Dial 1 WATS, UltraWATS, FONcard, FONcard Line 800 and and Ultra800 services. Users pay a $1,000 monthly subscription fee that covers outbound services and a $250 monthly fee for inbound calling services.

AT&T also offers a multisite discount plan covering digital transmission.

AT&T's Multi-Service Volume Pricing Plan (MSVPP) offers discounts of up to 56% on Accunet T1.5 and Accunet T45 services, as well as on Dataphone Digital Service and Accunet Spectrum of Digital Services. AT&T set six monthly revenue commitment levels ranging from $25,000 to $1 million, with contract lengths of one to five years.

The revenue commitment level is based on total monthly interoffice billing for all of the digital services.

MCI's Network Pricing Plan offers discounts of 3% to 56% on all of its private-line services. Revenue commitment levels range from $10,000 to $750,000, with contract lengths of one to five years.

"MCI's plan holds a big advantage here because it covers analog private-line services," Briere said. "AT&T's MSVPP only covers digital private-line services."

US Sprint said it does not yet have a combined term plan for its T-1 and fractional T-1 digital transmission services.

FCC trying to put ONA together again

continued from page 13

through its telephone unit.

In granting that waiver, the FCC said AT&T operates in a more competitive environment and has been subject to less stringent requirements in the Computer III rules. Additionally, the agency said last week that the appeals court did not specifically address AT&T's provision of enhanced services in its ruling.

However, the agency put on hold the main question raised by the court's ruling — whether the RBHCs will be able to offer enhanced services through their telephone units instead of through separate subsidiaries. The FCC said it would open another proceeding to deal exclusively with this issue, since it was at the heart of the court's reversal of Computer III.

In the interim, the FCC has given the RBHCs permission to continue offering existing enhanced services through their telephone units, although new services may not be offered through the telephone companies.

"We tentatively conclude that we should require the [RBHCs] to implement ONA independently of whether we ultimately conclude that we should permit the [RBHCs] to provide enhanced services on an integrated basis," the FCC stated in a notice last week.

Requiring the RBHCs to continue with their ONA plans will benefit customers by ensuring that the widest number of enhanced service providers can bring their offerings to market, the FCC said. Without ONA rules, regulators fear the RBHCs might give competitors inferior connections to the network or subsidize enhanced services with revenue from other services.

"The commission has developed ONA in a meticulous fashion over the past five years based on a substantial record. It would not be in the public interest to significantly delay the benefits of ONA to the American consumer," the FCC said.

> "The commission has developed ONA in a meticulous fashion over the past five years. It would not be in the public interest to delay the benefits of ONA to the consumer."
>
> ▲▲▲

RBHC officials were divided on the FCC's proposals.

A spokesman for BellSouth Corp. said the company is pleased that the FCC is moving to sort out questions raised by the appeals court's ruling. "The public deserves a quick end to the uncertainty that now exists," he said.

However, he added, BellSouth is concerned that the FCC is asking them to move ahead with ONA plans without any assurance that they will be able to continue offering enhanced services through their telephone units. Only by allowing the RBHCs to take advantage of network efficiencies by wrapping enhanced services into their telephone units can the FCC ensure that users have the maximum number of services available, he said.

Officials of Nynex Corp. said the company was neither surprised nor unhappy with the FCC's proposals. "We have affirmed our commitment to opening up the network . . . regardless of the outcome [of the FCC's proceeding]," said Kathie Ahern, managing director of docket/issue management for federal regulation.

"Making it easier for enhanced service providers to connect to our network is ultimately going to stimulate usage on the network," Ahern said. Nynex said it supports the FCC's efforts and believes it will be able to collect enough evidence to proceed with the proposed rules, she said.

The agency opened a 30-day period for comments on the rule making.

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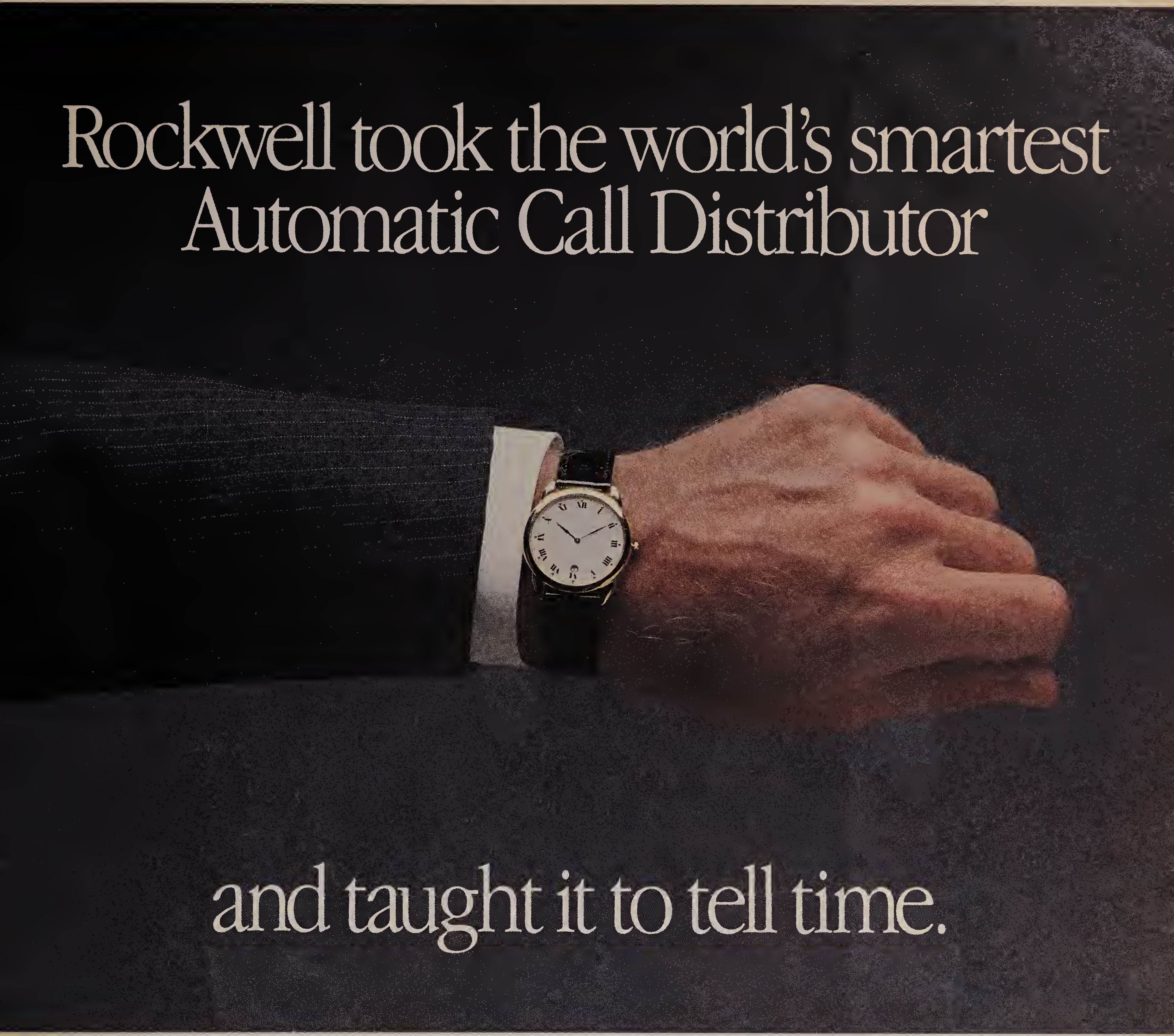
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See The FAXNeT Form on Page #14

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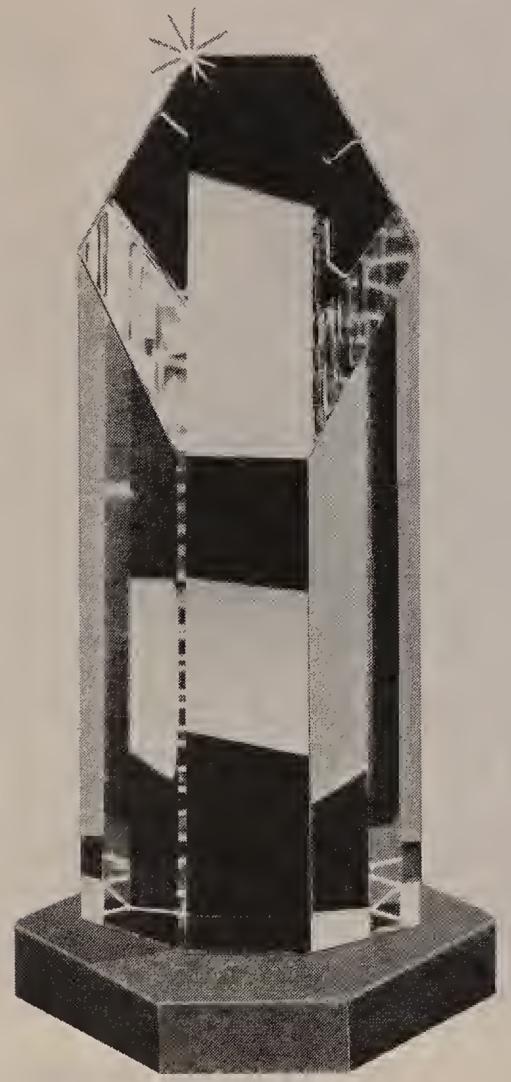

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The ENNE Awards Banquet begins at 6:30 P.M., Monday, September 10, 1990, at the Hyatt Regency/ Reunion in Dallas. Tickets are limited. For more information, please call (212) 983-4965.

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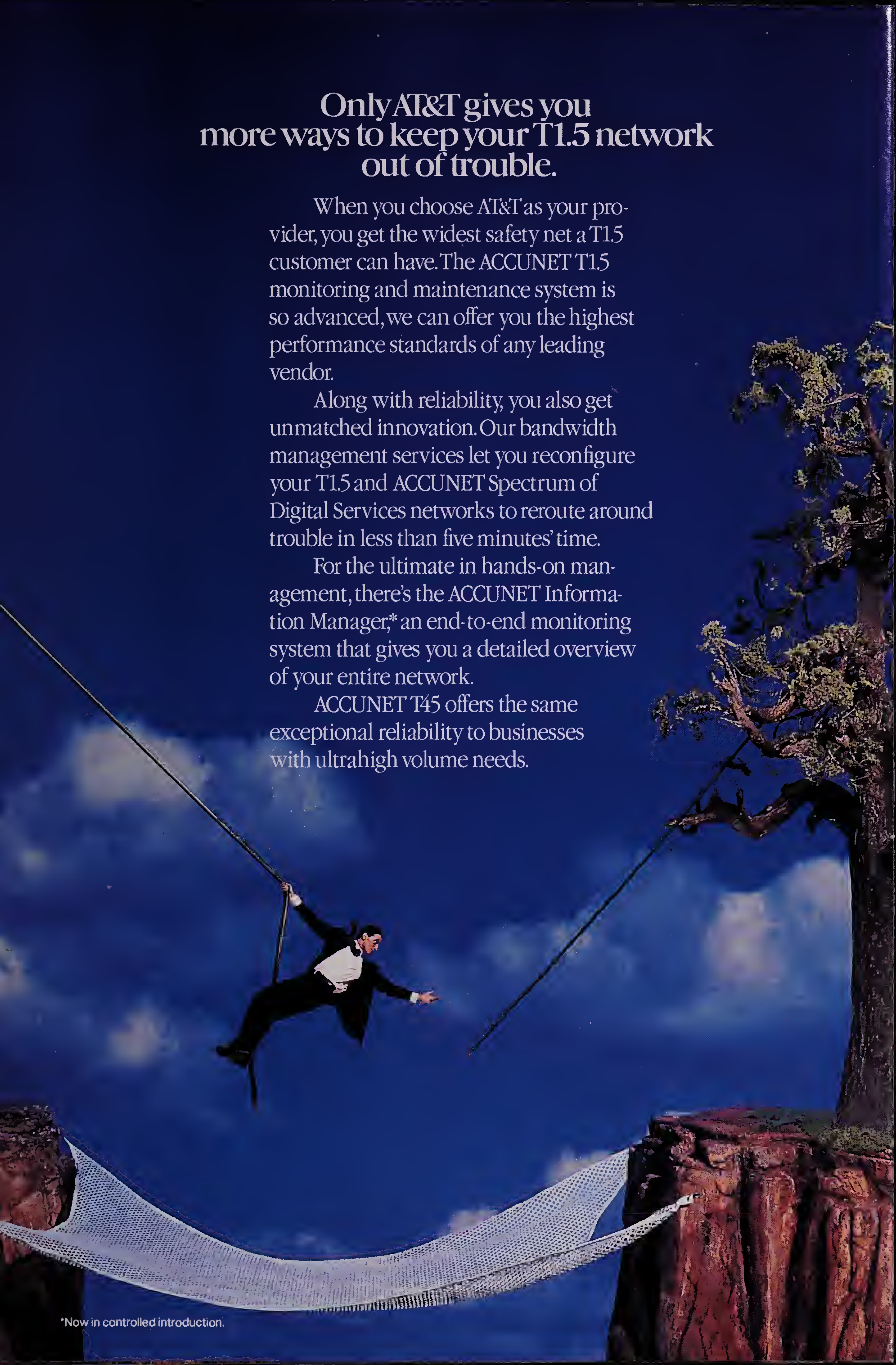

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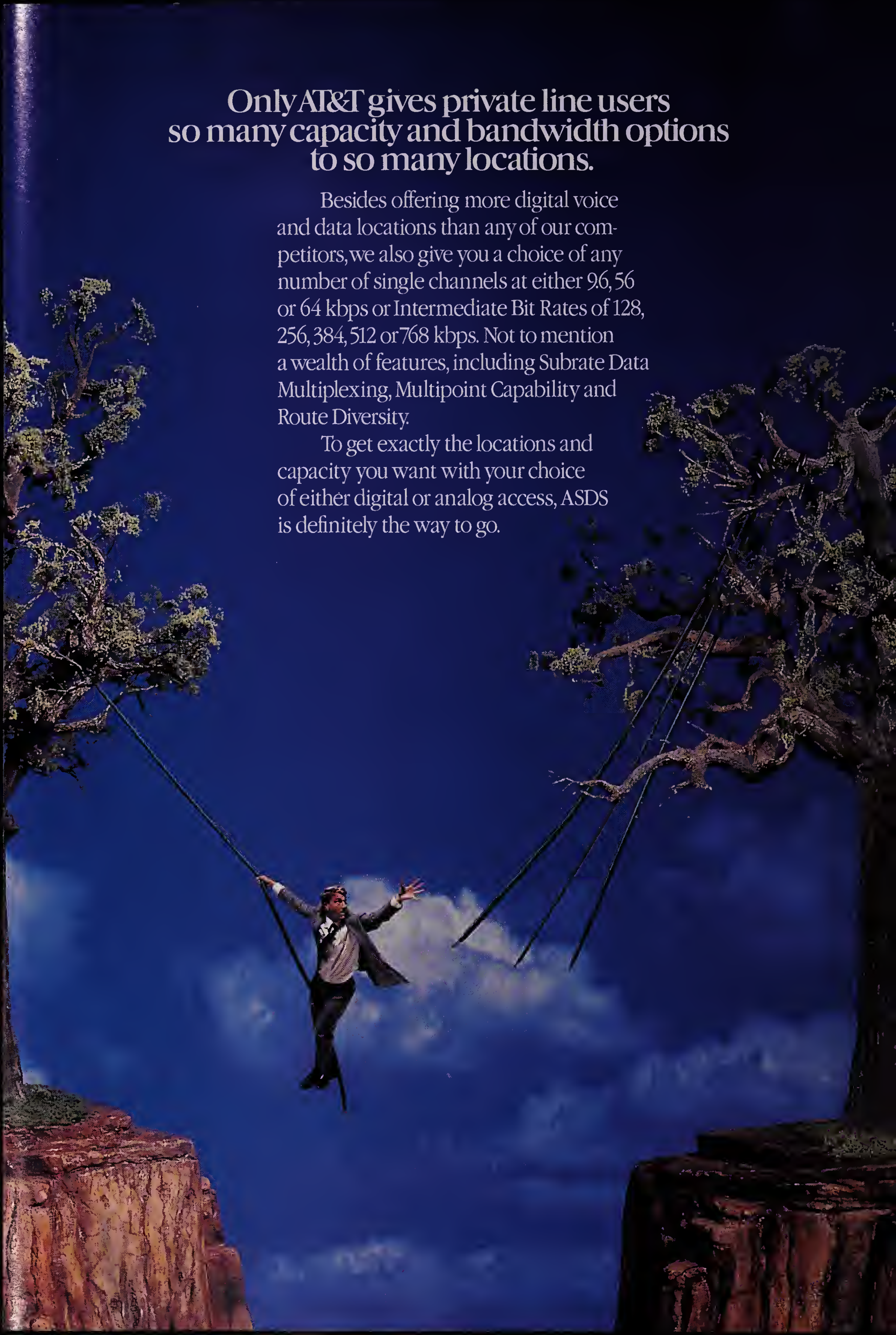

Only AT&T gives private line users so many capacity and bandwidth options to so many locations.

Besides offering more digital voice and data locations than any of our competitors, we also give you a choice of any number of single channels at either 9.6, 56 or 64 kbps or Intermediate Bit Rates of 128, 256, 384, 512 or 768 kbps. Not to mention a wealth of features, including Subrate Data Multiplexing, Multipoint Capability and Route Diversity.

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With AT&T ACCUNET Reserved Digital Service, you can extend your private network whenever you need to.

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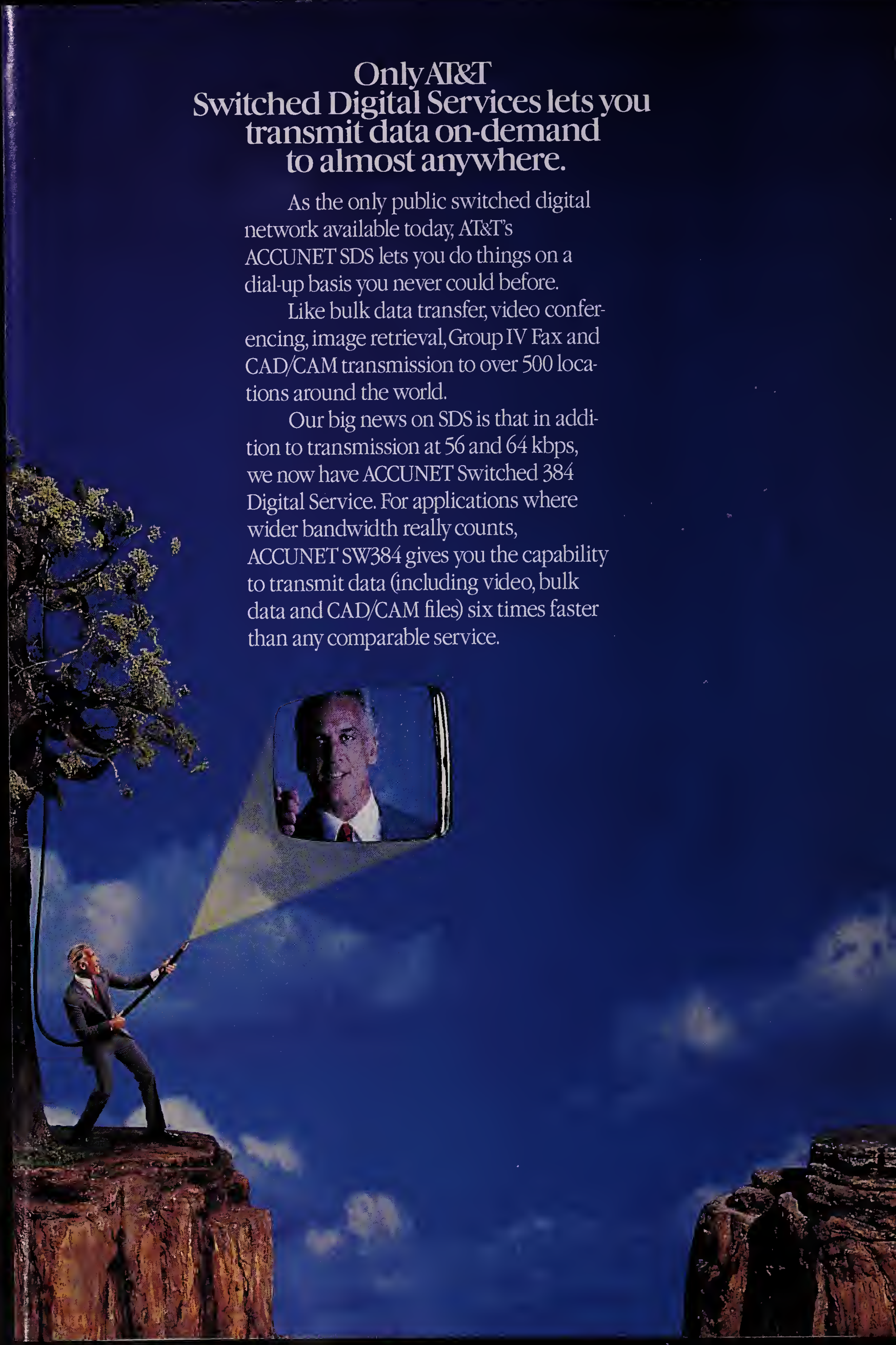

Only AT&T Switched Digital Services lets you transmit data on-demand to almost anywhere.

As the only public switched digital network available today, AT&T's ACCUNET SDS lets you do things on a dial-up basis you never could before.

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AT&T ACCUNET Family of Digital Services is now available at easy-to-reach prices.

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Worth Noting

> "There is a lot more growth in data-only applications than there is in voice/data applications or even voice applications."

Tim Zerbiec
Vice-president of technology
Vertical Systems Group
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Data Packets

Infonet Services Corp. last week said it will use **Siemens Communications Systems, Inc.'s** EWSP line of X.25 packet switches in its recently announced Virtual Private Data Network (VPDN) and its Enterprise-Defined Network Services (EDNS).

Infonet will install Siemens' EWSP products in its backbone network to support packet switching for both its public data network and its VPDN. In addition, Siemens will allow Infonet to resell EWSP packet switches to users as one of many services bundled under Infonet's EDNS.

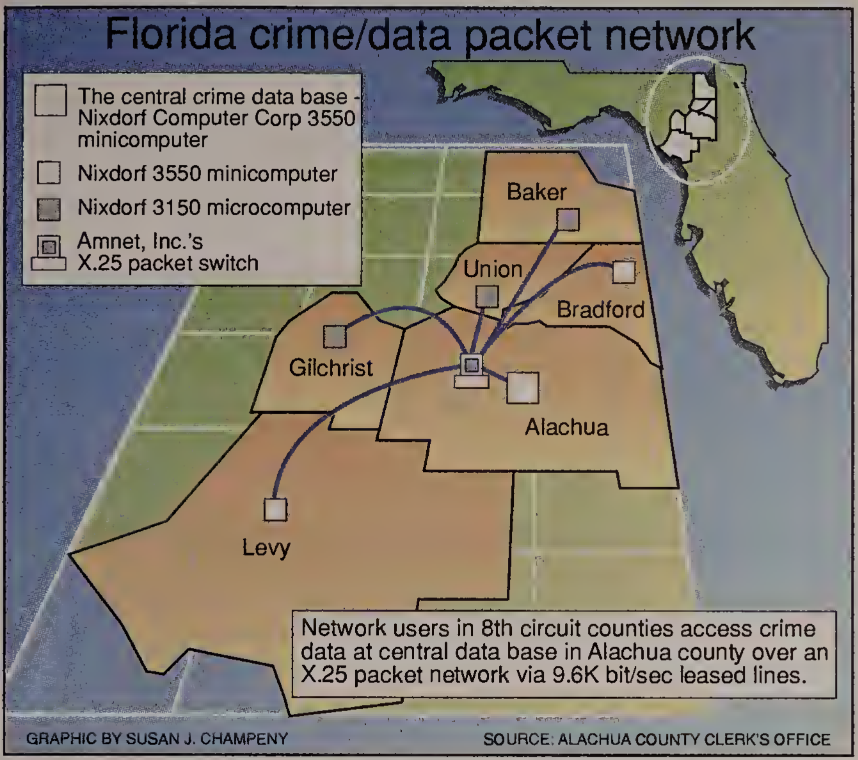
Residing at user locations, those switches will link users into Infonet's worldwide backbone packet network. Infonet's EDNS also consists of such things as network consulting, network design and facilities management services that help users build private networks consisting of leased and public facilities for voice and data transmission.

Microcom, Inc. is expected to announce today its first CCITT V.42- and V.42bis-compliant modem in the U.S.

First introduced overseas earlier this year, the QX/4232hs modem also supports CCITT's V.32 standard for transmission of asynchronous data in full duplex over dial-up lines at up to 9.6K bit/sec. The QX/4232hs is the first modem to support Microcom's new Auto-Logon feature, which automates the procedure for logging onto a remote host.

Support for V.42 enables

(continued on page 18)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☐ The central crime data base - Nixdorf Computer Corp 3550 minicomputer
☐ Nixdorf 3550 minicomputer
▨ Nixdorf 3150 microcomputer
Amnet, Inc.'s X.25 packet switch
Baker
Union
Bradford
Gilchrist
Alachua
Levy

Network users in 8th circuit counties access crime data at central data base in Alachua county over an X.25 packet network via 9.6K bit/sec leased lines.

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: ALACHUA COUNTY CLERK'S OFFICE

Fla. net takes tedium out of due process

Packet-switched net enables state's 8th circuit to automate scheduling, share data, cut costs.

By Bob Brown
Senior Editor

GAINESVILLE, Fla. — The six counties of Florida's 8th Judicial Circuit have banded together to build a shared packet-switched network that enables clerks to automate case scheduling and allows other users to share crime-related data.

Officials expect the X.25 packet-switch network will enable them to save at least $650,000 a year on data processing costs, eliminate the need for staff to manually write up crime-related reports and obviate the need for clerks to arrange for report delivery.

The 8th Circuit's Criminal Justice Information System (CJIS) network gives judges, court clerks, sheriffs, state attorneys and public defenders fast access to a centralized data base of crime-related statistics and on-line reports located here.

Managing case data has become increasingly unwieldy as the number of crimes in Florida has risen, burdening an already stressed criminal justice system, said Curtis Powers, Alachua County circuit court clerk.

CJIS is used to docket and schedule every felony and misdemeanor case in the circuit, as well as to generate arrest, bail, sentencing and case management reports, Powers said.

This procedure is far easier than past practices in which interested parties had to drive from one agency to another in order to pick up handwritten reports, he said.

Under CJIS, all data is keyed into the network's data bases from the time of an arrest to the disposition of a trial.

CJIS enables law enforcement agencies to input arrest information, including data on weapons, drugs and victims, into local data bases via personal computers or terminals. CJIS then generates a case number based on the severity of each charge and lets the chief judge, state attorney, public defender and circuit clerk access the information from a local data base or the centralized data base.

Using this information, clerks schedule court events and docket dispositions, as well as motions filed by attorneys. With a few keystrokes, CJIS prepares forms tracking each count and charge, and generates reports for the state on computer tape.

These reports, along with the numbers of arrests and types of crimes, will soon be sent electronically to the state, Powers said.

"CJIS provides a snapshot of how a case was started, what happened at each step of the judicial process, which agencies were involved and precisely what they did," Powers said. "It ensures that we don't waste time, money and energy duplicating our efforts."

Network setup

The network, which has been up since January, is anchored by an Amnet, Inc. Nucleus 7000 X.25 packet switch and a Nixdorf Computer Corp. Targon 3550 triple-processor minicomputer, which in turn supports a central

(continued on page 18)

Amex videoconferencing net helps bolster meetings

Net lets more employees attend conferences.

By Ellen Messmer
Washington Correspondent

NEW YORK — American Express Travel Related Services (TRS) Company, Inc. said it has recently installed its first videoconferencing system in an effort to involve employees who cannot travel to meetings.

The network should enable engineers and administrative personnel, as well as executives, here and in Phoenix to participate in group discussions.

"The big gain is to improve communication and to involve people who wouldn't be traveling," said Barbara Cooper, vice-president for the office of local-area network technology at TRS.

The videoconferencing system will be available to TRS Technologies personnel in Phoenix. TRS Technologies includes American Express Co.'s network management center and data processing facilities.

Both American Express sites are using a PictureTel Corp. V-3100 "rollabout" mobile system, which contains a C-3000 coder/decoder (codec), a 27-in. color monitor, a remote-control camera, a full-duplex audio system and a call setup panel in one portable unit.

The New York and Phoenix sites are linked via a private T-1 line, but American Express is also testing the system over switched facilities at 112K bit/sec and 256K bit/sec.

Company officials declined to name the service provider. The V-3100 operates at a range of 56K to 2.048M bit/sec.

A TRS team recently completed a four-month videoconferencing pilot test using different vendors' products, and the company decided to install the V-3100s.

Jim D'Angelo, director of network engineering for TRS, said that PictureTel's flexible service plan and on-site service costs were a key factor in selecting the V-3100.

Cooper said the company was satisfied with the quality of the

(continued on page 18)

Survey contends that IBM increased SNA dominance

By Paul Desmond
Senior Editor

LA JOLLA, Calif. — IBM's Systems Network Architecture is nearing the market dominance IBM had in mind when it announced the network architecture almost 16 years ago, according to a study indicating that nearly three-quarters of IBM mainframe users support SNA.

VTAM, the mainframe software that controls an SNA network, is now installed at 73% of all sites using an IBM mainframe and at 80% of the Fortune 1,000 organizations, according to a study by Computer Intelligence, based here. Of the 85% of IBM mainframes linked to wide-area networks, almost 90% use SNA communications protocols, double the percentage in 1986, the study said.

"SNA is now used at virtually all IBM mainframe sites, overcoming the resistance of the installed base to change," said Bruce Coughran, communications industry analyst at Computer Intelligence. Coughran interpreted the shift as the result of IBM's waning support for older protocols such as Binary Synchronous Communications.

The study is based on interviews with users at 11,000 IBM mainframe sites.

The study indicated SNA's Synchronous Data Link Control protocol has been growing rapidly in popularity among users, while usage of the older BSC has leveled off and begun to fall in the last two years. In 1986, 45% of the sites using an IBM mainframe for WANs used SDLC, while 67% used BSC. BSC usage leveled off at about 70% in 1987 and has dipped to 64% today. Meanwhile, SDLC usage has shot up to 89%.

Coupled with the acceptance of SNA has been interest in network management. Today, either IBM's NetView or Systems Center, Inc.'s Net/Master SNA network management software is installed at 30% of VTAM sites, up from 23% a year ago.

Fortune 1,000 users led the pack in terms of network management, with 43% of all sites using either NetView or Net/Master and another 5% planning to use one of them. Thirty-two percent of federal government sites, 23% of non-Fortune 1,000 sites and 22% of universities are also using SNA net management software, according to the study.

Amex video net helps bolster meetings

continued from page 17

system and convinced that it would be useful for employees. She said the pilot proved that many more people could participate in meetings with videoconferencing than without it.

Between two and 18 people have been involved in videoconferencing meetings during the pilot phase, primarily employees who would have been unable to attend past meetings.

The company is also exploring the possibility of conducting interviews and employee training via teleconferencing.

D'Angelo said that the better picture quality available in low-bandwidth codecs and today's low-bandwidth costs are two reasons American Express feels the time is right to commit to videoconferencing.

"Hopefully, we will see more of these units deployed with our sister companies at American Express," he added.

D'Angelo noted that the company plans to invest in a multipoint conferencing bridge to support other sites as they are added to the videoconferencing system. PictureTel's multipoint bridge permits simultaneous, interactive videoconferencing between as many as 16 locations.

The company is also developing a videoconferencing reservation system to handle employee requests for the service's time. Reservation systems are frequently used by companies where videoconferencing is popular. ◪

Fla. net takes tedium out of due process

continued from page 17

crime data base. Both devices are housed at the clerk's office here in Alachua County, which is in the northern section of the state.

Users in five neighboring counties can access the central-site data base via dedicated 9.6K bit/sec lines attached to the Amnet switch.

Local clerk offices in those counties are equipped with a Nixdorf 3550 minicomputer or 3150 microcomputer, which can provide access to local crime data bases or, via X.25 software, can establish a connection to the central-site data base here.

James Parramore, a computer analyst at the clerk's office, said he hopes to eventually distribute the centralized data base throughout the six-county circuit.

Currently, the central data base, which is accessible to some 440 users, is updated nightly by uploading data from the various county data bases.

The system has already resulted in lower DP costs, particularly for Alachua County, Powers said. The county, whose 185,000 residents command 85% of the 8th Circuit's caseload, in the past relied on a countywide IBM mainframe-based DP center that cost more than $700,000 a year to run.

With the new system, which cost about $1 million initially and is supported by the Alachua County Clerk's Office, DP costs will be less than $300,000 a year, Powers said. Also, Alachua County was on the verge of hiring six more employees to write up various crime reports by hand at a cost of $150,000 a year overall, but the new system has eliminated the need for those workers.

Network roots

The network has its roots in a state law that went into effect in 1988 that called for the revamping of Florida's criminal justice reporting system through a uniform, statewide Offender Based Tracking System (OBTS). Five of the six 8th Circuit counties, excluding Alachua, obtained state funding for OBTS systems.

Alachua, meanwhile, relied on the county-operated mainframe system that recorded dockets and arrests, among other data. With this system, Powers' office had to supply handwritten crime reports to the state, a timely process that inspired him to request state funding to study the need for a circuitwide CJIS and, later, more funds to build it.

"I told the board that if I couldn't save the circuit half a million dollars a year with CJIS, I'd resign," Powers said. "A few jaws dropped, but finally the board agreed. Alachua County alone has saved around $300,000 already this year, so I'm in pretty good shape."

Down the road, Powers said he hopes to see CJIS handle the 8th Circuit's civil case processing and allow private law firms to access data on the net. That will require another funding request, he said. ◪

Data Packets

continued from page 17

the QX/4232hs to comply with the international standard for error checking on dial-up circuits, while support for V.42bis enables the modem to comply with the international standard for data compression that helps the modem achieve an effective throughput rate of 38.4K bit/sec under optimal line conditions.

While V.42 and V.42bis require the use of Consultative Committee on International Telephony and Telegraphy-defined techniques for error checking and data compression, they also call for the use of error checking and data compression techniques built into Microcom's Microcom Network Protocol (MNP). This enables a V.42- and V.42bis-compatible modem to communicate with non-V.42 and non-V.42bis modems supporting MNP.

The QX/4232hs features that were not built into the V.42 and V.42bis standards such as MNP Class 10, which was introduced last fall.

The QX4232hs costs $1,099 and is available now. ◪

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See The FAXNeT Form on Page #14

LOCAL NETWORKING

PC AND TERMINAL-TO-HOST LANS, GATEWAYS AND MICRO COMMUNICATIONS PRODUCTS

Worth Noting

> "Every cloud has a silver lining. Because of the jitter problem with Texas Instruments [Inc.'s] Falcon chip on 16M bit/sec token-ring adapters, vendors are testing their cards more rigorously. Users will end up with a more reliable product than they would have if the jitter problem hadn't surfaced."

Colin Mick
Vice-president and
general manager
LanQuest Group
San Jose, Calif.

Netnotes

Hughes LAN Systems, Inc. recently released client-based connectivity software that runs under Microsoft Corp.'s Microsoft Windows 3.0 and gives DOS users on local-area networks simultaneous access to multiple net protocols.

ProLINC lets users access and share data among servers and hosts running Banyan Systems, Inc.'s VINES IPC, Novell, Inc.'s NetWare Internetwork Packet Exchange (IPX), Digital Equipment Corp.'s Local Area Transport, Sun Microsystems, Inc.'s Network File System or Transmission Control Protocol/Internet Protocol. As many as three of these protocols can be used simultaneously, and they can all be loaded and unloaded from memory without having to reboot the workstation.

The software includes drivers for a variety of Ethernet and broadband adapters. It also supports third-party terminal emulators from such vendors as DEC, Novell and Attachmate Corp.

ProLINC is priced at $595 per workstation.

For more information, contact Hughes LAN Systems at 1225 Charleston Road, Mountain View, Calif. 94043, or call (415) 966-7300. ◘

Investigations sparked by NW story on PC fire hazard

Fire officials, others examine harmonics problem.

By Tom Smith
New Products Editor

A *Network World* article on the potential fire hazard posed by networked personal computers has sparked an investigation into the cause of at least one mysterious fire.

Stewart Gary, administrative batallion chief and network manager at the Carlsbad, Calif., City Fire Department, said he planned to reexamine the cause of a fire in the city's finance department building after reading the article ("Multiple PCs — a new fire hazard," *NW,* May 7).

"We shook our heads with a nervous feeling, saying we didn't know why this fire started," Gary said. "But when we read [the *Network World* story], we fell out of our chairs and said, 'Holy cow, this could be it.' "

The article described how multiple personal computers, such as in a major local-area network installation, can strain the existing wiring in many buildings, creating a fire hazard.

Because of the way personal computers and some other electronic equipment draw power, electrical current may flow over neutral wires designed to carry little or no current. The neutral wires can become hot and the insulation around them can melt, leading to a fire.

In addition to fire officials, the problem has drawn the attention of standards authorities and others.

Gary contacted the article's author, Mark Waller, to discuss the Carlsbad fire. Waller is president of Power Management Associates/The Waller Group, Inc. in Glendale, Calif., a power quality and computer facilities consultancy.

Gary said Waller offered a convincing argument that the fire was caused by harmonics problems, although Gary said he is withholding judgment until Waller, whom the city hopes to hire, can inspect the office, which is a modular 10- to 15-year-old structure. Gary said the harmonics problem is only one of several possible causes for the fire.

The harmonics problem is particularly acute in offices with modular partitions, which often use neutral wires of the smallest diameter. Rostec Industries, a manufacturer of modular office panels in San Jose, Calif., said one of its customers reported several incidents of smoking partitions, which were caused by a harmonics problem.

"We actually had neutrals with the insulation melted off of them at the customer's site," according to Connie Northup, engi-

(continued on page 20)

Nat'l Semiconductor offers E-net adapters for Macs

By Susan Breidenbach
West Coast Bureau Chief

SANTA CLARA, Calif. — National Semiconductor Corp. last week continued its push into the Ethernet board market with the release of two adapters for Apple Computer, Inc. Macintosh computers.

The EtherNode-16 NB is a 16-bit NuBus board for the Macintosh II, and the EtherNode-32 SE/30 is a 32-bit card that plugs into the Macintosh SE/30's Processor Direct Slot. Both boards include software drivers that support Apple's EtherTalk protocol for running AppleTalk over Ethernet networks.

The EtherNode-16 NB, priced at $495, incorporates National Semiconductor's DP839X Ethernet controller chip set, which is used by virtually all manufacturers of Ethernet boards.

The EtherNode-32, which lists for $595, uses National Semiconductor's next-generation DP-83932 System-Oriented Network Interface Controller (SONIC). SONIC is a 32-bit controller designed to eliminate one network bottleneck by maximizing network I/O in 32-bit servers and workstations.

These products join the Ethernet boards the company introduced for the IBM-compatible personal computer market at Comdex/Spring in April.

Together, they represent the first fruits of National Semiconductor's Computer Enhancement Group, which was formed earlier this year to develop end-user products that leverage the huge investment the company has in its semiconductor technology.

National Semiconductor is located at 2900 Semiconductor Drive, Santa Clara, Calif. 95052; (408) 721-5149. ◘

"Although we have kept the name 3Com, we are a very different company from the 3Com of a year ago. We have different goals, different values and a different culture."

Eric Benhamou
President
3Com Corp.

Top 3Com execs talk strategy at briefing

Benhamou and Krause discuss product plans, renaissance program and LAN Manager strategy.

By Susan Breidenbach
West Coast Bureau Chief

SANTA CLARA, Calif. — 3Com Corp. has rebounded after stumbling badly last summer and attributes much of its recent success to a new renaissance program company executives launched with considerable fanfare early this year.

The announcement met with a certain amount of skepticism at the time, but the early results are promising.

3Com's 1990 fiscal year, which ended May 31, can be divided roughly into prerenaissance and renaissance eras, and the company's performance in the latter era improved decisively by virtually every measure (see graphic).

3Com's main Renaissance man, recently appointed President Eric Benhamou, indicated that these welcome gains were fueled by nothing short of a complete metamorphosis. Benhamou, along with other company officials including Chairman and Chief Executive Officer William Krause, recently spoke with *Network World* during a briefing session at 3Com headquarters here.

"Although we have kept the name 3Com, we are a very different company from the 3Com of a year ago," said Benhamou, who won a three-way race for the presidency of the company earlier this year. "We have different goals, different values and a different culture."

There is a newfound pragmatism that is very evident at 3Com these days. Admittedly plagued with the not-invented-here syndrome in past years, 3Com is now focusing its research and development resources on specific product areas and leaving others largely to third parties.

Krause and Benhamou identified four primary product areas in which 3Com will concentrate its development efforts: internetworking, net management, network software and transmission systems (see "Ethernet board business still key focus of 3Com," page 20).

The company is still pulling for OS/2 and its network operating system derivative, LAN Manager, but said it clearly feels less proprietary about them. 3Com executives are careful these days to distinguish between the core network operating system and the network software around it.

"The core provides you with file and printer sharing, the redirector interfaces and a few key [application program interfaces]," Benhamou said. "We played a role in bringing the LAN Manager core together, but we don't see ourselves having a big role in moving it forward.

"There is a whole series of software subsystems — connectivity elements, management elements, directory services, store-and-forward messaging systems, remote procedure calls and so on — that are around the core and are required to build complete data networks. This is where we intend to lead," he said.

"That layer is increasing every day, and that is where the greatest growth is — not in the core. If anything, the core is getting more and more 'commoditized' and becoming a distribution game."

Benhamou said 3Com intends to port the network services software it develops for LAN Manager to any other operating system environment that makes sense. 3Com engineers have clear directives to make software as independent of the core network op-

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3Com execs talk strategy

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erating system as possible, structuring programs so that key elements will be reusable in other environments.

"My belief is that NetWare is reaching its peak in market share, though it will continue to be a major force, and that LAN Manager will continue to take hold. But I could be wrong, and I don't want this choice to be crucial to our strategy," Benhamou said.

The new orientation at 3Com results in part from a reassertion of the internetworking division, which was Bridge Communications, Inc. before the merger of the two companies in 1987. Not coincidentally, this division is where Benhamou's own roots are: He is one of the few original Bridge managers still at 3Com.

The merger that seemed made in heaven quickly went sour, culminating in 3Com's startling downturn last summer. Benhamou said the companies had difficulty understanding each other's perspective.

"3Com had a very PC-centric view of the world, and Bridge had a very enterprise-oriented, global view in which PCs were considered a kind of subhuman creature," Benhamou said. After a brief honeymoon, "there were misunderstandings about who was really running the company, which culminated in the departure of [Bridge founders] Bill Carrico and Judy Estrin."

The original 3Com side completely took over, and the Bridge division seemed almost to go into hibernation, with the introduction of new products becoming a rare event. Consequently, "Competitors like Vitalink [Communications Corp.] and cisco [Systems, Inc.] made some inroads that would not have been possible had Bridge remained an independent company," Benhamou said.

Also, merging the two companies' very different distribution channels turned into a nightmare, he said. 3Com, up to that point, had sold only through resellers, while Bridge relied largely on a direct sales force. The ensuing battle for territory resulted in the departure of many Bridge salespeople and created a lot of ill will among the resellers.

But some channel conflict had been expected. The fatal flaw, Benhamou said, stemmed from the extreme PC-centric course 3Com set off on after Carrico and Estrin left.

"This led us to become more of a computer company, specifically a client/server computer company," he said. "We were going to be the Sun [Microsystems, Inc.] of OS/2." 3Com was enthusiastically building high-end server boxes and diskless workstations, and got caught up in the network operating system war with all the fervor of a religious crusade.

By last summer, Benhamou said, it had become obvious that 3Com could not compete in the computer business with IBM, Compaq Computer Corp. and a myriad of others. "We didn't have the right culture or technology, and after we experienced some financial difficulties last summer, we realized that this all had to stop."

3Com's William Krause

Company executives decided it was time to return to the original intent of the 3Com/Bridge merger: to build the industry's leading global data networking company. The main charter of the new 3Com is to simplify the use of the increasingly complex networks its customers are installing, Benhamou said.

To this end, 3Com is building a big interoperability laboratory in its new campus here. Any new products will have to prove themselves compatible with all existing 3Com products, as well as with those of selected third-party vendors. The products will also have to be manageable from a single net management station.

The interoperability laboratory will be made available to major customers that want to test expansion or upgrade plans before implementing them. "Anyone who has tried to achieve interoperability by just matching data sheets has been in for trouble," Benhamou said.

The new emphasis on global networking has brought the part of 3Com that used to be Bridge back to the forefront. While there is a perception that this division has shriveled up and died since the merger, Benhamou said nothing could be further from the truth.

"There is a higher level of investment in the internetworking business than there has ever been, pre- or post-merger," Benhamou said. In particular, he pointed to the NetBuilder line of entry-level bridge/routers 3Com launched with great success this year.

"With NetBuilder, we've been able to show people that internetworking products don't have to be these complex boxes one doesn't dare touch without a Ph.D. in computer science," Benhamou said. "We've made it really simple."

While 90% of Bridge's revenue came from terminal servers at the time of the merger, the company was also a leader in the single-protocol router market. However, the post-merger turmoil caused 3Com's new internetworking division to "miss the market window for multiprotocol routers, which cisco Systems swooped down to fill," said Bobbi Murphy, marketing director of 3Com's internetworking division.

Jolted awake, the division redirected much of its resources from communications servers to bridging and routing technology. Conceding the high end of the multiprotocol routing market to cisco Systems for the moment, 3Com earlier this year rolled out its NetBuilder line and started carving out a niche for itself in what Murphy calls "the consumer end of the routing business.

"We took a different position from what everyone else has taken so far; it's based on our observations of how people use networks. They migrate from repeating to bridging to routing as their networks change and as they add more stations," Murphy said. "So we decided to offer a product that will migrate with them."

The aggressively priced NetBuilder line has been very well received by customers, and Murphy's division is now hungrily eyeing other parts of the market.

Two product areas in particular are getting priority: a high-bandwidth *n*-way brouter for switching data packets among a number of high-speed networks, including Fiber Distributed Data Interface nets; and boards that will start migrating bridging and routing into the wiring closet as modules for intelligent hubs.

"We're actively looking to partner with some of the hub vendors and do some technology transfers," Murphy said. "I think you'll see an announcement

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3Com's performance improves during renaissance period

Fiscal Year 1990 (ended May 31)	Q1 - Q2	Renaissance period Q3 - Q4	Increase
Orders (in millions)	$209.7	$266.1	7.8%
Sales (in millions)	$195.1	$224.1	14.9%
Gross margin	46.4%	50.1%	3.7 points
Operating income	5.7%	10.3%	4.6 points
Earnings per share	$0.22	$0.48	118%

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: 3COM CORP., SANTA CLARA, CALIF.

Ethernet board business still key focus of 3Com

3Com Corp.'s traditional business, Ethernet boards, continues to be its primary focus.

This runs contrary to analysts' concerns at the end of fiscal 1989 that 3Com's revenues were becoming increasingly dependent on transmission system sales, to the tune of nearly 60%. Because Ethernet boards are perceived as low-margin, commodity items, analysts would like to see 3Com de-emphasize them.

"The analysts are dead wrong," said William Krause, 3Com's chairman and chief executive officer. "The best analogy I can think of is semiconductors — [dynamic random-access memory]. A lot of folks several years ago thought DRAMs were commodities, bad business. Now you can't get into that business because the competitive barriers to entry have become so high.

"I think the adapter business will go the same way. What people forget is that technology never stops progressing. There are only commodity companies, not commodity products."

According to 3Com President Eric Benhamou, no one is in a better position to fight a commodity war than 3Com, the world's largest Ethernet board producer. 3Com has the advantage of its manufacturing technology and economies of scale.

On the high end, Krause and Benhamou identified two trends in the adapter business that the vendors trying to stamp out commodity boards will not be able to pursue.

One is the high end of the business that is furiously building higher performing boards that do not involve a proportionate increase in cost. The other trend encompasses the protocol and software complexities that higher levels of internetworking and network management are adding to boards.

"There's an enriched adapter segment emerging in which the value add is built-in internetworking readiness and full implementation of network management," Benhamou said. "Sure, there are 100 Ethernet board manufacturers, but there are only one or two that have some level of understanding of these things. The next steps in the LAN adapter business require the expertise we have."

To exploit the emerging opportunities at the high end, 3Com is continuing to pour significant research and development resources into its adapter business. "Today," Benhamou said, "the people in our transmission systems division don't feel like underclass citizens."

— Susan Breidenbach

NW story sparks investigations

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neering assistant at Rostec. "The problem is that they establish a system and it seems to be OK, but as the work force grows, they add printers, copiers or computers."

The customer now has a maintenance electrician checking for hot panels, Northup said, and is implementing a higher grade of wire. Meanwhile, Rostec, like other manufacturers, is moving to a thicker wire that dedicates a neutral wire to each current-carrying, or phase, wire.

The Carlsbad Fire Department's Gary explained that the harmonics problem is cumulative. When phase wires from an entire floor, for example, are supported by a single large neutral, the harmonics problem can be particularly acute. For that reason, experts recommend a higher grade of wire for larger neutrals supporting phase wires from an entire floor.

Other possible solutions to the harmonics problem include the use of filters, which are electronic devices that sit between equipment and a power source.

An ANSI/IEEE committee is examining the harmonics problem and will issue a "recommended practice" calling for the use of filters and other devices to keep harmonics to a maximum level, according to Dave Hartmann, cochairman of the committee. The recommended practice could be an ANSI/IEEE standard by year end, he added.

Circuitry could also be installed in power supplies to make the personal computer appear to the power source as if it were drawing current in a linear fashion, said Arthur Freund, who conducts seminars on power problems and is consulting editor for *Power Quality* magazine in Ventura, Calif. Both solutions, however, are expensive and have not been embraced by personal computer manufacturers because customers have not recognized the benefit and because they are not required by law.

In addition, the national electrical code, a set of safety requirements, could be revised for harmonics if data is presented to prove that such a revision is needed, according to Mark Ode, senior electrical specialist at the Quincy, Mass.-based National Fire Protection Association, which publishes and oversees the code. ☑

Worth Noting

"Before we decided to outsource, we had great fear of losing control. But now we have much greater control over our strategic direction than when we owned and managed [the network and data center]."

Katherine Hudson
Senior vice-president
Eastman Kodak Co.
Rochester, N.Y.

Association Watch

The **Tri-State Telecommunications Association** recently elected a new slate of officers for the 1990-91 year.

The nonprofit organization serves users in Delaware, New Jersey and Pennsylvania.

Lewis Weinstein, telecommunications manager at Morgan, Lewis & Bockius in Philadelphia, will be president; David Fulwider, telecommunications manager at American Express Co. in Newark, Del., will be first vice-president; Constance Verner, voice communications manager at Midlantic National Bank in Pennsauken, N.J., will be second vice-president; Peg Quirk, telecommunications manager at Schnader, Harrison, Segal & Lewis in Philadelphia, will be secretary; and Charles Aldred, supervisor of telecommunications at Philadelphia Electric Co., will be treasurer.

The **Electronic Data Interchange Association (EDIA)** recently announced its support for a bill introduced in the U.S. House of Representatives that calls for the Small Business Administration (SBA) to examine the impact of EDI on small businesses. The bill marks the first time EDI has been the subject of congressional legislation, according to Jerome Dreyer, EDIA president. Dreyer said EDIA has offered to help the SBA conduct the study. ◘

Study offers insight into successful groupware use

Software must fit with existing work processes.

By Wayne Eckerson
Senior Writer

CAMBRIDGE, Mass. — Companies that fail to carefully examine the impact of groupware on end-user work habits and procedures will not achieve the productivity gains groupware offers, according to a new study.

"Unless companies pay attention to the organizational impact of introducing [groupware], they increase the risks that the new technology will fail," stated the study by the Sloan School of Management at the Massachusetts Institute of Technology here.

The study, based on interviews with nearly 225 groupware users in 25 companies, was issued by Sloan's Center for Information Systems Research (CISR). The study defines groupware as computer-based tools used by work groups to facilitate information sharing. These tools include electronic messaging, electronic calendars, electronic directories and file sharing.

The study concludes:

- **Groupware must mirror the work processes of end users.** End users are more likely to use groupware tools that enhance their existing work processes, rather than tools that offer new capabilities. For example, users said electronic messaging provides the greatest value because it allows them to communicate with colleagues faster and more conveniently than before.
- **End users must perceive an immediate benefit from using groupware.** While groupware might enhance the productivity of a group or work team, end users will not employ it if the effort required in using groupware exceeds the benefits it provides.

For example, many users said maintaining an electronic calendar was redundant — most preferred to maintain pocket calendars.

- **Top executives must provide clear direction about the benefits and importance of using groupware.** Groupware needs a champion among the top echelon of corporate leaders who can work to overcome initial resistance to using the technology. Once a top executive announces that groupware will be an important means for improving communications throughout the company, users will be more likely to employ the technology.
- **Companies must offer comprehensive training that provides a conceptual understanding of groupware tools.** Users who are taught only the basics of using a groupware tool are less likely to experiment with the tool's functionality and how it might be best applied to enhance productivity. ◘

EXECUTIVE BRIEFS

Choose the right VAN. Gartner Group, Inc. has produced a 75-item checklist to help companies choose the best value-added network (VAN) provider to support electronic data interchange.

VANs can help firms implement global EDI systems, recruit trading partners and provide hardware and software to get an EDI program established.

The following is an excerpt from a checklist compiled by Gartner Group consultants David Taylor and Beth Gindin.

- Determine whether a VAN's geographic network coverage is sufficient.
- Make sure a VAN's EDI translation software supports the documents you and your trading partners intend to use.
- Rate each VAN's reliability in terms of prompt customer service and problem resolution.
- Compare VAN pricing strategies.
- Evaluate VAN accounting and security controls.
- Examine VAN commitment to multiple communications protocols.
- Test the EDI technical expertise and support capabilities of the VAN's field forces.
- Define the vendor's role in managing large-scale, global trading partner implementations.

For more information, call (203) 964-0096. ◘

DEC's Maynard, Mass.-based headquarters.

DEC looks inward for network staffers

Intensive training program helps the computer maker meet staffing demands for global network.

By Wayne Eckerson
Senior Writer

MAYNARD, Mass. — The shortage of skilled network personnel can be a major problem for large companies that have far-flung operations and rely heavily on communications technologies to conduct business.

Rather than spending hundreds of thousands of dollars to recruit qualified candidates, Digital Equipment Corp. has established an intensive in-house training program to supply a steady crop of skilled technicians and managers to run the company's worldwide network.

The program, which includes basic and advanced networking courses, helps the computer manufacturer maintain a high level of networking expertise within its approximately 700-member internal network staff, according to Wayne Hall, manager of DEC's U.S. telecommunications operations.

The basic course is open to entry-level DEC employees who want to specialize in communications or veteran DEC employees looking to make a career change. The advanced course is geared toward senior-level network staffers at DEC who want to broaden their understanding of networking and enhance their business and managerial skills.

The program isn't cheap though; it costs DEC around $12,000 per student. Each course accommodates about 25 students and is offered once or twice a year. Course fees are charged back to students' divisions at DEC.

Despite its costs, DEC views the program as a sound investment. "You have to look at [the training program] as a long-term investment that is absolutely critical to maintaining the quality of DEC's internal telecommunications," said Joe Megna, manager of corporate telecommunications planning at DEC.

Both Megna and Hall sit on the steering committee that oversees the program, which was established in 1984. The two managers were also instrumental in developing the curricula for the two courses.

Hall admitted that smaller companies would have difficulty justifying the expense of a training program such as DEC's. However, he said DEC's program is cost-effective compared to hiring an outside training firm to conduct classes or recruiting and relocating people with the appropriate skills and experience.

While DEC has been asked by some of its own clients to open the courses to outsiders, the vendor has not done so. There are already more DEC employees who want to enroll than the program can handle, Megna said.

As a result, admission to the training program is highly competitive, especially for the advanced course.

This year, for example, there were twice as many applicants for the course as there were classroom seats available. DEC has chosen not to expand enrollment in an effort to keep classes manageable and because classrooms must contain a computer terminal for every student.

Prospective students must submit a written application and a recommendation from a sponsoring manager. They must also interview with a member of the

(continued on page 45)

NETWORLD 90℠ DALLAS

September 10-13, 1990 • Dallas Convention Center

NetWorld 90 Dallas has moved to a site almost as large as Texas — the Dallas Convention Center. More than 400 exhibitors will showcase the latest technology that links your information systems together, from LANs in the corner office to strategic networks that span the globe. NetWorld 90 Dallas needs no further introduction; the show has become the industry's hottest high technology event, according to exhibitors and attendees alike!

Professionals do need to make the right connections in order to succeed in business, and planning makes the difference in finding the solutions for your business needs.

Mark your calendar now to attend the world's most extensive event on computer connectivity, product technology and education. The highly regarded NetWorld seminar series begins on Monday, September 10, with the NetWorld product and services exposition opening on the 11th and continuing to the 13th. For your full attendee program guide or information on exhibiting in NetWorld, please call 1-800-444-EXPO.

THE INDUSTRY STANDARD

Worth Noting

Great Britain registered a greater improvement in public data network performance than any of the 14 European countries examined by the European Association of Information Services in a recent weeklong test. Just over 14% of the 2,331 transmissions from the country failed this year, compared with 24.7% last year. A spokesman said the improvement may be the result of increases in local node capacity.

World News

AT&T plans to begin offering its Global Software-Defined Network (SDN) service in Australia on Sept. 16, assuming the Federal Communications Commission approves a filing the carrier made earlier this month.

AT&T said it will work with Australia's dominant international carrier, Overseas Telecommunications Corp. (OTC), to provide the service. In order to access Global SDN, users must maintain dedicated links to AT&T points of presence (POP), or subscribe to the carrier's domestic SDN service, and maintain dedicated links to OTC POPs.

Users that don't subscribe to SDN will pay a $250 monthly fee and a $500 installation charge, while SDN users will face no extra charges for Global SDN. Global SDN users will be able to access seven-digit dialing plans for calls between the countries, faster call setup times and discounts of up to 60% over standard international long-distance rates.

Global SDN is currently available only in London, although as many as 15 more countries may be added during the next two years.

Equal access rules to fuel competition in Puerto Rico

By Walter Sweet
West Coast Correspondent

SAN JUAN, Puerto Rico — A recently completed survey by a local exchange carrier here concluded that network users are planning to take advantage of new equal access rules and leave AT&T for other international service providers.

The Puerto Rico Telephone Co. last week released results of a questionnaire that indicate 46% of those surveyed would choose Telefonica Larga Distancia de Puerto Rico (TLD) as their primary international long-distance provider, while just 34% said they would opt for AT&T.

MCI Communications Corp. and US Sprint Communications Co. were also mentioned as alternatives to AT&T.

Until now, AT&T has had a stranglehold on the international long-distance market in the commonwealth of Puerto Rico, with some observers estimating AT&T's market share at 80%.

But earlier this year, rival international service providers were granted equal access rights with local exchange carriers.

Previously, users had to dial a separate sequence of numbers to access different long-distance carriers. Under equal access, customers will dial "1" to initiate a long-distance call, just as AT&T customers do.

As a result of the survey, TLD officials said the company will spend $4.3 million to purchase additional satellite transponder capacity from Contel ASC.

TLD purchased transponder space on ASC-I, a start-up operation that carries voice and data between the U.S. and Puerto Rico.

TLD said the additional transponder will be able to handle 1,000 simultaneous phone calls. The transponders handle speeds up to T-1 speeds and will be used for voice, data and eventually video.

PERSPECTIVES
BY JAMES KOBIELUS

Global net managers must take on multiple roles

Global networking isn't half as glamorous as it sounds. When private networks cross national boundaries, they create new levels of complexity. Often, net managers must get acquainted with new standards, vendors and regulations. Culture shock may also set in for some managers as they try to adjust to monopolistic foreign telecommunications regimes.

The challenge for managers of global private networks is to overcome obstacles to worldwide connectivity and information sharing. The success of their companies' international business requires that telecommunications professionals call on three skill sets, either internal or external to their organizations:

- **Integrator.** There is a need for global systems integrators and value-added networks. The integrator should have a presence in each country being linked. Third-party integrators often play a chief role when many firms must be connected.
- **Envoy.** A global network is usually a conglomeration of distinct national or regional networks, each of which must conform to particular regulations and standards. Network managers should respect different national business cultures and establish good working relationships with foreign post, telegraph and telephone administrations, carriers and suppliers.
- **Lobbyist.** Users must put pressure on governments to improve their telecommunications infrastructures, open them to competition and abide by international technical standards. At the very least, users should be able to choose from competing domestic carriers and be free to use whatever equipment they prefer as long as it doesn't harm the domestic network.

The long-range goal for global network managers is location transparency. A truly global network is one that transcends national boundaries and can deliver a full range of services to corporate users anywhere in the world.

Kobielus, a contributing editor to Network World, *is a telecommunications analyst with Network Management, Inc., a Fairfax, Va.-based consulting firm.*

Public data net woes in Europe

Results of a recent week-long test of Europe's public data networks

Originating country	Number of transmissions*	Percent successful	Percent unsuccessful due to public network failure
Austria	152	93.4%	0.7%
Belgium	44	88.6%	2.3%
Denmark	875	74.5%	13.1%
Finland	941	81.0%	12.8%
France	300	84.0%	4.3%
Great Britain	2,331	83.3%	10.3%
Italy	382	57.3%	18.6%
The Netherlands	426	84.7%	5.2%
Norway	914	81.2%	6.9%
Portugal	93	35.5%	32.3%
Spain	886	63.9%	25.2%
Sweden	2,550	86.7%	6.0%
Switzerland	33	97.0%	3.0%
West Germany	32	93.8%	6.3%
Total	9,959	81.0%	14.3%

*Figures exclude 773 failed transmissions to France during a massive network outage in that country.

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: EUROPEAN ASSOCIATION OF INFORMATION SERVICES, CALNE, ENGLAND

Survey finds flaws in Europe's public nets

While tests prove public data nets' performance has improved, 14% of all transmissions still fail.

By Barton Crockett
Senior Editor

CALNE, England — Two European trade groups recently completed an extensive survey that concluded that technical glitches in Europe's public data networks cause nearly one out of every seven data transmissions to fail before reaching its destination.

Overall, 19% of the roughly 10,000 dial-up public data network transmissions recorded in a one-week test by the European Association of Information Services (EUSIDIC), based here, and the European Online User Groups (EUROLUG) failed. Of those, 14.29% didn't reach their destination because of problems within the public network (see graphic).

By contrast, the same survey last year found that deficiencies in European public networks were accountable for nearly 18% of transmission failures ("Testing shows European data networks second rate," *NW*, Dec. 25, 1989/Jan. 1, 1990).

According to Harry Collier, EUSIDIC's executive director, while this improvement is encouraging, it is only slight and may not be completely accurate, given that this year's data excludes 773 failed transmissions to France during a half-day outage of Transpac, the French public data net.

Surveys prior to 1989 did not pinpoint the causes of network failures and included failures caused by users. The overall failure rates in 1989, 1988, 1987 and 1986 were 24.22%, 25.38%, 29% and 30.73%, respectively.

EUSIDIC and EUROLUG only recently reported this year's data, which was compiled by members of the industry and user organizations in early March. The data is available in a report titled "EUSIDIC/EUROLUG Survey of Public Data Networks in Europe 1990."

Unacceptably high

Collier said the percentage of failures due to problems with public networks is still unacceptably high. He noted, however, that the single biggest cause of failures was busy signals at local public data net nodes, which is most likely the result of insufficient net capacity.

Users can overcome the public network capacity problems by building private links to public data network nodes, he added.

Once users managed to log on to public data networks, he said, failure rates in northern Europe averaged between 6% and 8%.

Collier added that the inception of competition in Europe might lead EUSIDIC and EUROLUG to discontinue the tests.

"Basically, we're rapidly developing a situation like the U.S., where there are so many alternatives open to users that just measuring a national carrier's service [levels] may not be that important," Collier said.

My network in marketing won't share

Now what?

The latest directive from senior management is a doozy. Marketing and manufacturing must now share applications. As for all those different PCs and systems in place, management is "confident you can meet that challenge without incurring significant additional capital expense."

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with the network in manufacturing.

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PRODUCTS & SERVICES

THE LATEST OFFERINGS FROM VENDORS AND CARRIERS

First Look

Microrim introduces R:Base Version 3.1

Microrim, Inc. is expected to announce this week a new version of its R:Base data base management system that lets R:Base users and Ashton-Tate Corp. dBase users simultaneously access and work on a single dBase file.

R:Base 3.1 is the only data base management system that allows users on a local-area network to access and manipulate the same dBase III or dBase III Plus file as another user of either of the two Ashton-Tate data bases, Microrim claimed. The software runs on any LAN with a DOS-based net operating system.

The new release costs $795 for the first user and $995 for five additional users. R:Base 3.0 users can upgrade for free.

Microrim, Inc., 3925 159th Ave. N.E., P.O. Box 97022, Redmond, Wash. 98073; (206) 885-2000.

Digital Link offers T-1 muxes with DSU/CSUs

Digital Link Corp. recently introduced central- and remote-site T-1 multiplexers with integrated data service unit/channel service units (DSU/CSU).

The Digital Link **DL-100 Digital Service Multiplexers,** which use time-division multiplexing, support as many as 16 interface cards on a central-site DL-100 and two interfaces on a remote-site DL-100.

One interface has three ports: a wide-area network T-1 interface, a local T-1 interface for connection to a private branch exchange and a single V.35 or RS-449 port for data terminal equipment operating at 56K bit/sec and above. The interface has a built-in DSU/CSU, which enables it to connect directly to a digital circuit. A second interface has two or four RS-449 or V.35 ports.

Remote-site DL-100s cost from $3,695 to $5,495. A central-site DL-100 with no interface costs $6,000. The T-1 card costs $3,195. The two- and four-port data cards cost $1,000 and $1,800, respectively.

Digital Link Corp., 252 Humboldt Court, Sunnyvale, Calif. 94089; (408) 745-6200. ◼

MacWorld announcements

Vendor	The Wollongong Group	Group Technologies
Product name	PathWay Client NFS for Macintosh, Release 1.0	Aspects
Main function	Lets Macintosh users access files on remote NFS servers	Acts as groupware for Macintosh nets
Key feature	Uses Macintosh icon-based commands	Comes bundled with word processor, drawing and painting software
Price	$195 for single user; $10,925 for 100 users	$299 per user
Available	September	October

GRAPHIC BY SUSAN J. CHAMPENY

SOURCES: THE WOLLONGONG GROUP, INC., PALO ALTO, CALIF., AND GROUP TECHNOLOGIES, INC., ARLINGTON, VA.

Net packs unveiled at MacWorld Expo

Wollongong software lets Macs access NFS files; Group Technologies intros groupware offering.

By Laura DiDio
Senior Editor

BOSTON — Apple Computer, Inc. Macintosh users got some new communications tools at last week's MacWorld Expo/Boston, including a groupware package for Macintosh nets and software that lets Macintoshes share files with Network File System (NFS) servers.

Palo Alto, Calif.-based The Wollongong Group, Inc. introduced its PathWay Client NFS for Macintosh, which enables Macintosh users to access files and applications on remote processors supporting NFS as though it resided on an AppleShare file server.

The software runs on Macintoshes on AppleTalk nets or on Macintoshes equipped with an Ethernet interface, and it works through standard Macintosh icon-based commands, according to David Langlais, Wollongong's director of product marketing.

NFS is a set of services developed by Sun Microsystems, Inc. that has become a de facto network standard for distributed file and print sharing on Transmission Control Protocol/Internet Protocol-based networks.

There are currently more than 90 commercially available implementations of the NFS protocols.

When a remote NFS directory is mounted, all files appear as Macintosh file and folder icons, Langlais said.

He claimed that prior to the availability of Wollongong's PathWay Client NFS for Macintosh, users had no native method of accessing NFS-based servers and host machines.

PathWay Client NFS for Macintosh, due out in September, comes bundled with a Line Printer Remote Print Server application, which enables other systems such as Digital Equipment Corp. VAXes, IBM mainframes and Reduced Instruction Set Computer workstations to access printers on Apple LocalTalk networks.

A single-user copy of PathWay Client NFS for Macintosh costs $195, a five-user package is priced at $895, a 10-user package costs $1,600, a 20-user license costs $2,945, a 50-user license costs $6,890, and a 100-user package costs $10,925, or about $110 for each user.

New aspects

Group Technologies, Inc. of Arlington, Va., unveiled its Aspects groupware software, which enables Macintosh users on a network to simultaneously work on documents. Aspects supports as many as 16 networked Macintoshes or those linked to an AppleTalk net via a modem at 2,400 bit/sec or faster.

Aspects enables users to create documents that contain text, graphics, charts and illustrations.

The software simulates an "interactive conference room environment," according to Quentin Spencer, an engineer at Group Technologies who coauthored the application program. A mediation control function allows the conference initiator to manage the meeting. Participation can be limited to specific individuals, and the extent of their participation, such as read-only or write-only access, can also be managed by the conference initiator.

Aspects comes bundled with a word processing package, as well as drawing and painting software. It costs $299 for each user license and is expected to be available in October. ◼

Software allows Sun users to control Cabletron gear

Net mgmt. can take place from one workstation.

By Tom Smith
New Products Editor

ROCHESTER, N.H. — Cabletron Systems, Inc. recently developed a Unix version of its LANview/Windows net management software that enables Sun Microsystems, Inc.'s SunNet Manager to monitor and control Cabletron equipment for the first time.

LANview/SunNet Manager, a Simple Network Management Protocol (SNMP)-compliant product consisting of software and a Sun workstation, enables users to perform physical and data-link layer management of Cabletron and Sun equipment from a single workstation.

SunNet Manager previously performed management tasks only at the transport layer and above, tracking data such as memory space available. With LANview/SunNet Manager, by contrast, the system will be able to monitor packets and collisions on a per-port basis.

To make LANview/Windows run in tandem with SunNet Manager, Cabletron built SNMP support into its management software and has either already added SNMP agents to existing products or is now doing so.

Cabletron products that currently have SNMP agents include Ethernet interface boards for Apple Computer, Inc. Macintosh and IBM microcomputers, as well as the Multi-Media Access Center LAN hub. Cabletron said it will add SNMP to its Ethernet bridges.

In addition, the company ported LANview/Windows to run under the X Window System and AT&T's OpenLook, the windowing system and graphical user interface supported on SunNet Manager. LANview/Windows supported Microsoft Corp.'s Microsoft Windows and Hewlett-Packard Co.'s OpenView.

LANview/SunNet Manager is available now from Cabletron and Sun for $3,495.

Cabletron can be reached by writing to 35 Industrial Way, Rochester, N.H. 03867, or by calling (603) 332-9400. ◼

Voice processing system supports 96 phone lines

CANTON, Mass. — Perception Technology Corp. recently unveiled a mid-range voice processing system that supports as many as 96 telephone lines and 350 hours of voice storage.

The Vocom 40 consists of a voice processing computer and an application processor that are linked via an RS-232 cable.

The new system supports twice the number of lines as the Vocom 30, which it is intended to replace. The Vocom 30, which supports as many as 80 hours of voice storage, is no longer sold directly by Perception but is marketed through value-added resellers. Perception Technology will sell the Vocom 40.

The new system falls below the company's high-end voice processing system, the Vocom V, which uses multiple voice processors to support more than 1,000 lines and voice storage in multiples of 350 hours.

Like the Vocom V, the Vocom 40 can support simultaneous attachment via RS-232 to as many as 12 hosts, such as IBM and Unisys Corp. mainframes used for data base management. The Vocom 30 supported a single host.

The voice processor on the Vocom 40 is the same as that used in the company's existing Vocom products: a Digital Equipment Corp. Q-bus-based minicomputer running DEC's RSX operating system. Perception Technology, however, developed the Vocom 40's application processor. The device is an Intel Corp. 80386-based Industry Standard Architecture personal computer running Unix, and it is used to run custom software applications.

For instance, an account balance inquiry program running on the processor could enable a caller to enter an account number. This would prompt the application to initiate a data base query to an attached host and download the balance to the voice processor, which would play a digital voice recording of the amount to the caller.

Vocom 40 is available now. Prices range from $80,000 for 24 lines and 15 hours of speech storage to $190,000 for 96 lines and 45 hours of storage. Each additional 100 hours of storage costs between $20,000 and $25,000.

Contact Perception Technology at 40 Shawmut Park, Canton, Mass. 02021, or call (617) 821-0320. ◼

VIRUSES

BY WAYNE ROBERTSON

The best defense against viruses may be sheer luck

Few things scare a local-area network administrator more than the thought of a computer virus. Because LANs are completely interconnected, a virus on one node will rapidly spread to the network as a whole. Cleaning up a network can take hundreds of hours at a cost of several thousand dollars per hour for the downtime. And that doesn't even begin to take into account data lost as a result of the virus.

Before developing a plan of attack, a LAN administrator should be aware that a virus attack can't be totally prevented. In fact, it's a safe estimate that every network with one hundred or more nodes harbors at least one virus. Most viruses are impossible to detect and don't cause any problems. Often, a virus-caused problem is blamed on hardware, applications or user incompetence. The problem is how to approach the problem of viruses in a network.

> It's a safe estimate that every net with 100 or more nodes harbors at least one virus.
>
> ▲▲▲

What is the truth about viruses? Are we to believe virus-detection software publishers when they say that we are surrounded by viruses ready to strike at a moment's notice? Is a virus inevitable or just a remote possibility?

Actually, the answers to these questions largely depend on the nature of the user organization. In companies where the users are more computer-literate, willing to experiment and always interested in learning new things, a virus is almost inevitable. They will bring in software from friends, bulletin board systems and other outside sources.

Other organizations are more rigid, with users being less interested in experimentation. Procedures are followed religiously, and there are few problems. The chance of a virus attack is much less likely in these situations.

Are viruses here to stay? Of course. Should LAN administrators spend all their time worrying about them? Certainly not. The best course is to review the virus-detection methods available, make a reasoned selection based upon available information and hope for the best.

It is a myth to believe that viruses can be prevented in a network. Those who believe they can be avoided are just fooling themselves. When developing a plan of attack, however, the network administrator should be aware of a few conditions:

- Procedures that prohibit bringing in software from the outside without the approval of the LAN administrator are ineffective. Such procedures are usually used only to discipline a user after a problem has occurred.
- Protection at the node level is impossible. Without physical control over the computers, there is no way an administrator can effectively prevent a virus attack. An experienced computer user can defeat any virus protection program.
- Protection at the network level is the best hope, even though current software is not sophisticated enough for virus detection and prevention. Most virus-detection programs are an adaptation of the single-user method.

For career purposes, a LAN administrator needs to make top management aware of the problems and the plans to prevent and eliminate a virus. When a problem does occur, management will be aware of the administrator's concern and will be more sympathetic while the problem is being resolved.

There is no guaranteed way to prevent a virus attack. A four-leaf clover is as good a defense as any.

Robertson is the network administrator at Saint Agnes Medical Center in Fresno, Calif.

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EDITORIAL

Local-loop competition will improve public net quality

Users should be skeptical of regional Bell holding company claims that the U.S. public network is becoming second rate.

Warning that foreign countries lead the U.S. in deployment of advanced network facilities, the RBHCs are lobbying for reforms that would allow higher earnings from local services and sweep aside line-of-business restraints.

The RBHCs argue — often using data compiled by William Davidson, a professor at the University of Southern California and a paid RBHC consultant — that local carriers need higher earnings to improve facilities and services. Davidson even suggests that competition should be restricted so that local carriers can deliver leading-edge technologies to more consumers. He calls this approach a "progressive monopoly."

But that line of thinking is flawed.

First, it emphasizes services for which demand is uncertain. For example, Davidson laments slow U.S. deployment of Integrated Services Digital Networks, despite the fact that large-scale demand for ISDN has not been proven to exist in this country or abroad.

The argument also ignores important areas where the U.S. clearly holds the lead. For example, no non-U.S. carrier offers virtual network services comparable to those available here. U.S. users also have greater freedom to build less expensive private networks than users abroad.

In addition, Davidson dismisses the fact that nearly every user group in the world, including the International Communications Association, the International Telecommunications Users Group and the Consumer Federation of America, has praised the U.S. network and the benefits of our permissive regulatory structure.

It would be difficult to find better judges of the public network than the customers who rely upon it.

And most importantly, Davidson ignores the benefits that competition has brought to this country. Without a doubt, the competitive U.S. interexchange market is the envy of users around the world.

Why else would so many countries now be working to embrace network competition?

If the U.S. truly wants to improve the quality of the public network in this country, regulatory officials should work as quickly as possible to extend the benefits of competition to the local loop.

This is because the free-market approach, rather than the progressive monopoly tact favored by Davidson, now reigns supreme as the best proven way to deliver network services to users.

OPINIONS

MANAGEMENT STRATEGIES

BY CHUCK PAPAGEORGIOU

CIO success depends on maintaining balanced focus

Many information systems (IS) managers at all levels and in all disciplines aspire to the position of chief information officer (CIO), competing with one another as well as with other department managers.

The position of CIO is a highly visible one with rewards equivalent to other chief officer positions. In fact, a select few surpass the $1 million a year mark in salaries. So why do recent surveys show that 30% of the managers that reach this position are dismissed or demoted and 21% leave voluntarily?

First, many senior corporate managers view the IS department as a support group independent of the corporation's core business. As a result, the CIO is not included in the organization's business planning. Therefore, the CIO must undertake the task of improving the company's information technology infrastructure while operating under a severe handicap.

The unfortunate result is that some of the ideas the CIO implements, although good for the IS department, are not necessarily good for the rest of the organization. Sometimes the effect is actually detrimental to the goals of the corporation. When the ideas backfire, the organization holds the CIO responsible — a situation that could have been easily avoided through more careful planning.

In most cases, a thorough evaluation of IS operations will reveal that not all areas are of strategic importance to the corporation. With the help of other senior managers, a plan of action can be put together for improving those areas that are of strategic importance.

Another factor that contributes to CIO failures is that most managers dislike — and sometimes resist — change.

Many CIOs fail in their positions, despite all the support they get from superiors, because they never solicit and secure the support of the company's middle managers, the ones that make things happen. Frequently, these managers resist and sometimes ignore directions they think are unrealistic, threatening to their jobs or just "headquarters hype."

Not keeping communications channels open causes line managers to think that the people developing the plans don't know or don't understand the mechanics of their operation, which is one of the major stumbling blocks to implementing information technology in decentralized organizations. Any changes that affect the division's budget are evaluated on their own merit with no concern for overall corporate well-being. Short-term gains are favored over long-term benefits, and political wars start to erupt.

> Some CIOs fail because they don't understand their function clearly.
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This situation can be avoided. To implement a plan in decentralized organizations, the CIO must do a cost/benefit analysis for each division and prove to that division's management that it will benefit directly. If the immediate benefits are neither obvious nor easy to document, then the CIO must convince the division's management that the benefits to the corporation as a whole are so significant that everybody will benefit.

Many CIOs come from the IS side of the organization and don't understand the business side of the house. They remain narrowly focused, implementing systems on the basis of technical reasons and ignoring financial justification. They become deeply embroiled in day-to-day operations or corporate politics and ignore the strategic, business planning and staff development aspects of the job.

Others have a financial background but no understanding of information technology. These CIOs have a hard time rallying behind a system or solution that they don't understand, especially if the financial benefits can't be outlined clearly. They are so overwhelmed with the information technology options that they are afraid to make any decisions for fear of failure.

Unfortunately, in the fast pace of today's corporate world, there is no time for complete analysis of every option; sometimes even a wrong decision is better than none.

Some CIOs fail because they just don't have a clear understanding of their function. Essentially, the CIO's job is to perform information technology forecasting and assessment — in other words, to act as a corporate consulting resource advising the organization how to use information technology either to improve current business or to create new business.

A good CIO must stay current with both business developments and technological advances that might affect the organization and maintain a forward-looking attitude toward change — a tall order for any one person to fill.

Often the CIO needs the continuing help and advice of experts in various fields. For this purpose, the CIO can establish a corporate office of technology and focus on selecting which technologies should be evaluated.

Being a successful CIO is not an unattainable goal. However, unless we study successful CIOs, follow their careers, learn from their mistakes and improve on their successes, the failure rate of CIOs will remain higher than that for most other executive positions. ◼

Papageorgiou teaches information technology and is a staff member of the telecommunications department at a Fortune 100 company.

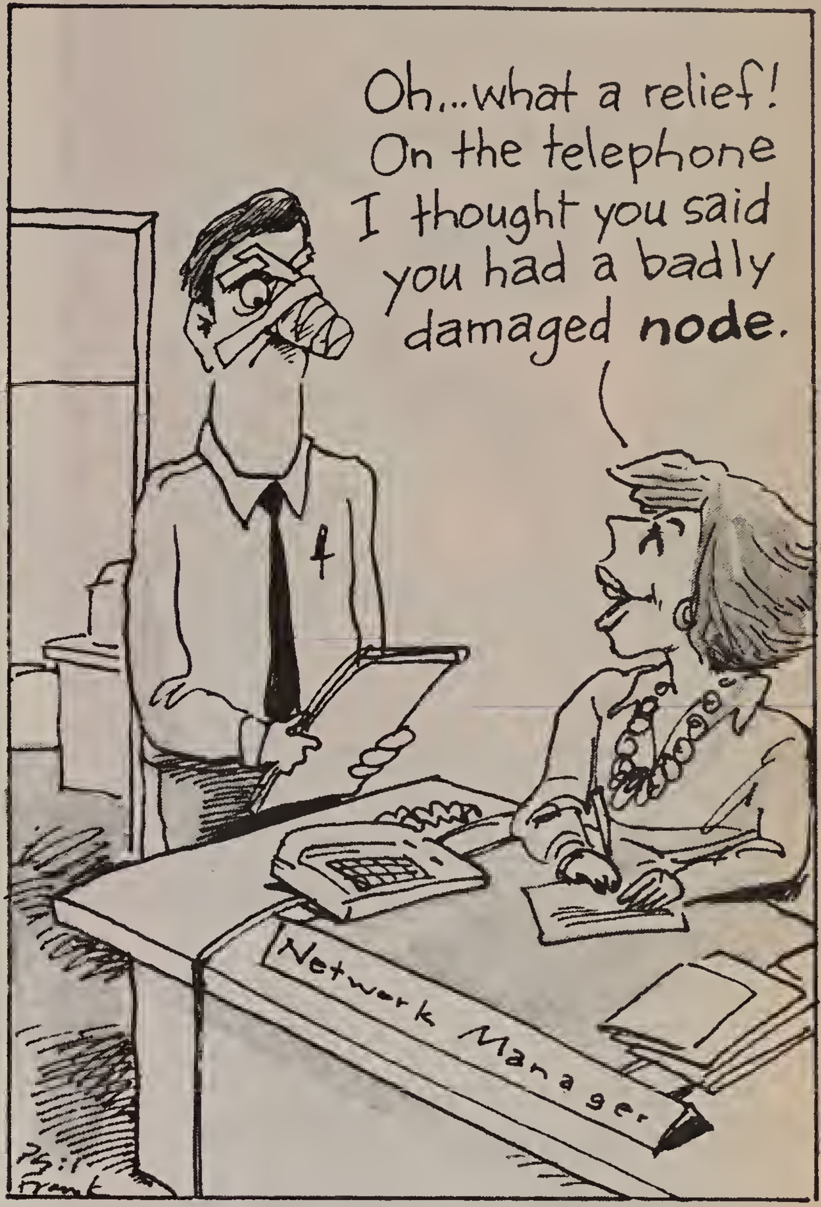
NOTHING CONTRIBUTES MORE TO PEACE OF SOUL than having no opinion at all. We must have lots of peaceful readers out there. Stir things up by writing an opinion column for us!

Columns should be 600 words in length and submitted on disk, via modem or through MCI Mail at 390-4868.

If you'd like to write a column, call Alison Conliffe, assistant features editor, at (508) 820-7416 or fax your idea to us at (508) 820-3467.

TELETOONS

BY FRANK AND TROISE


Oh...what a relief! On the telephone I thought you said you had a badly damaged node.
Network Manager

LETTERS

Less is not really more

I read two items in your June 25 issue with great interest because of the contradictory messages they conveyed.

The first was the Worth Noting box in the Local Networking section, which pointed out that not many people are currently using OS/2 and LAN Manager — and, I presume by extension, LAN Server. In spite of this, Madge Networks is deluged with a steady stream of requests from users for support for OS/2 Extended Edition.

As a consequence of these requests, we have added the provision of OS/2 Extended Edition support to our development schedule as a high-priority item.

A few pages later in that same issue, I came across John McQuillan's opinion piece ("Boundless list of options can lead to user headaches," *NW,* June 25).

If McQuillan's point is that, as vendors, we should use some discretion and not provide some solutions, we think that is unacceptable.

Our whole purpose is to provide users with as many options as we possibly can. Our current support of different network operating system drivers and associated information files is now just under 1M byte and growing.

But if McQuillan's point is that providing many options is confusing, then it is our burden as vendors to try to simplify the choices for our users, not to limit their options as his column implies.

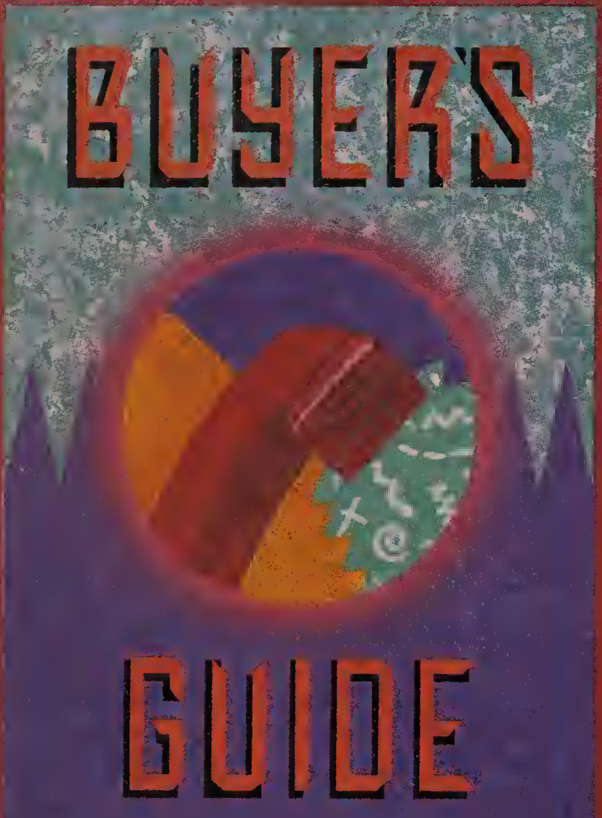
In our case, rather than confronting users with a diskette full of undecipherable subdirectories and supporting manuals, we have developed an installation program that walks the user through all of the choices of network operating system and command line options that are designed, in large measure, to support a wide variety of hardware plat-

(continued on page 38)

Network World *welcomes letters from its readers.*

Letters should be typed, double-spaced and sent to Editor, Network World, *161 Worcester Road, Box 9172, Framingham, Mass. 01701.*

Letters may be edited for space and clarity.



CALLING AND TRAVEL CARDS

The calling card shuffle

CONTINUED FROM PAGE 1

ing cards, travel cards, credit cards. But they all have the same function — allowing users to charge phone calls to home or business accounts.

The calling card products available on the market today are at different stages of development within each of the carrier product lines.

Modern competitive calling cards — those offered by all of the major long-distance providers — trace their roots back to the days before the establishment of equal access, which is now almost universally available throughout the U.S.

Looking back

The first calling card service, the AT&T Calling Card — originally known as the AT&T Credit Card — debuted in the early 1970s. It is one of the oldest long-distance products, older than mileage-sensitive business line-based WATS products or switched access-based 800 services.

AT&T created the AT&T Credit Card to take pressure off company operators handling calls billed to home numbers. This card took advantage of changes in technology that let the user input numbers via push-button keypads.

The AT&T Credit Card initially allowed the user to make calls in much the same manner as today. The user dialed 0 plus the telephone number, then entered the calling card number when prompted. This was the de facto standard against which all other travel cards were evaluated.

To avoid fraud, AT&T uses a proprietary data base to validate the calling card authorization codes and to process calls. All calling card numbers must be validated before a call is placed. Fraud is a major concern within the industry as millions of dollars each year are lost when stolen authorization numbers are used to make unauthorized calls.

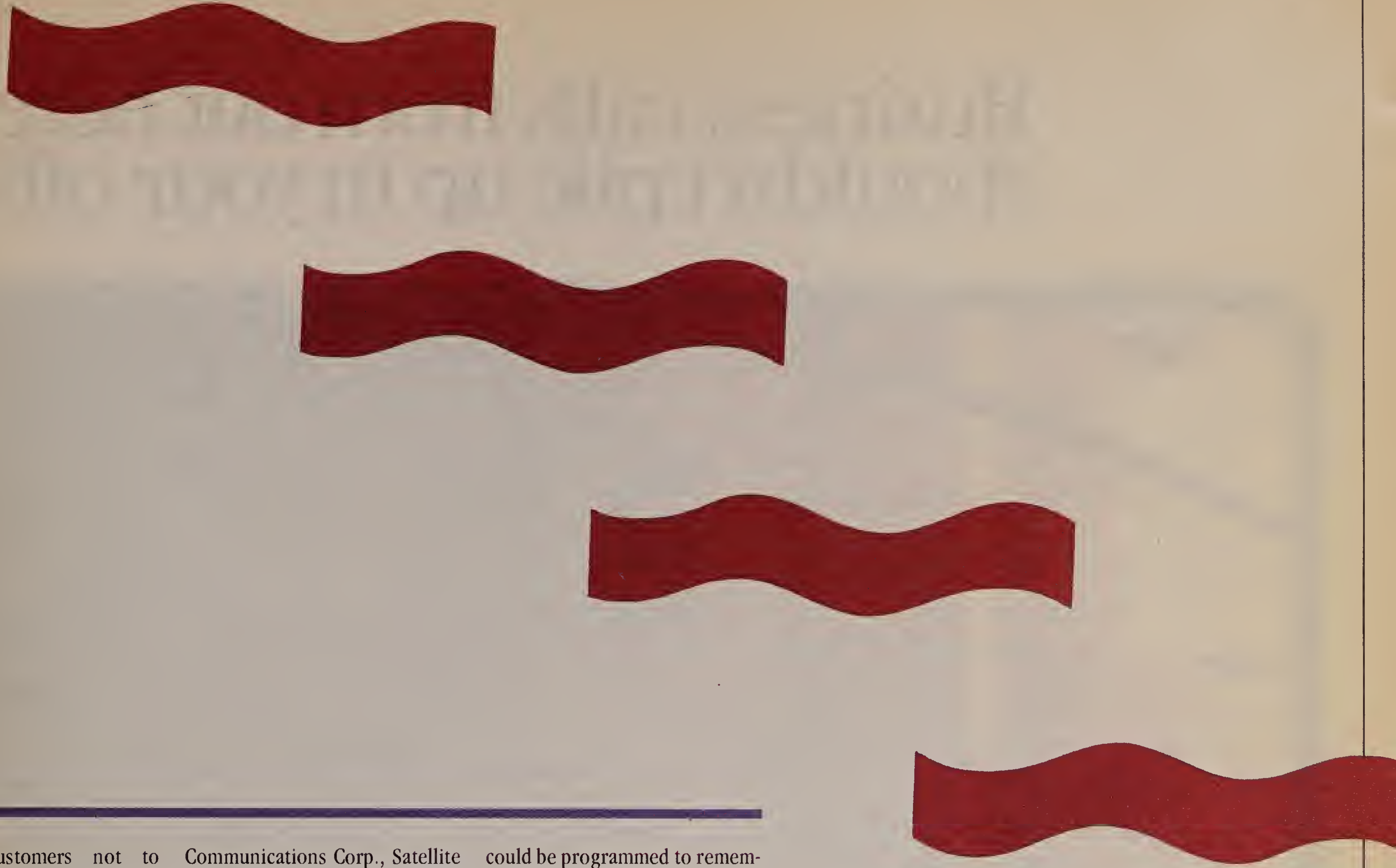
CHART • GUIDE

A chart comparing RBHC travel and calling cards begins on page 36, and a chart comparing interexchange carrier travel and calling card offerings starts on page 37.

In the first days of long-distance competition, AT&T levied a service charge of $1.15 per call for using the card. This covered the additional expense of maintaining a data base, card production and other service-specific costs.

The AT&T Credit Card quickly became universally accepted by users. AT&T used its all-important Bell operating company and other local exchange carrier relationships to make universal access and billing a reality.

Eventually, AT&T changed the name of the card to the AT&T Calling Card. The carrier began issuing the card in plastic with a magnetic strip on the back — a tie-in to the AT&T Card Reader phones now seen in airports, hotels and other locations. By en-



couraging customers not to punch in their AT&T Calling Card numbers, the carrier was potentially cutting back on fraud because authorization code pirates could not see callers entering the digits.

AT&T steadily lowered its surcharges, partly because improvements in data base technologies and operations lowered the costs of providing the validation function, but also for competitive reasons. As of June 1, 1990, the service charge was 80 cents per call for the Classic AT&T Calling Card.

The wide variety of cards and options can pose costly questions for users.

It was against this backdrop that AT&T's competitors — MCI Communications Corp., Satellite Business Systems and US Sprint Communications Co. (then known as GTE Sprint) — started to offer their own travel card services. They were handicapped from the start.

Before the days of equal access, customers of alternative long-distance services had to dial an access number plus additional account and authorization numbers to access their carrier's network. While autodialers may have alleviated some of this task at the home or office, they were of little help on the road. A market quickly developed for small hand-held tone generators that could be programmed to remember the string of digits.

First methods

The first methods of accessing non-AT&T carrier networks mimicked local access options for homes and businesses. At the time, Feature Group B circuits (950-0XXX or 950-1XXX) were used for local access. The XXX corresponded to the nationwide carrier identification number issued by Bell Communications Research.

Thus, MCI users on the road could dial 950-1022 and enter the called telephone number and authorization code, just as they did back home. In most cases, when providing access in this manner, the carriers were not adding much overhead to the switch maintenance function, so they added no surcharges.

This was a big advantage for AT&T's competitors and their customers. If users did not mind the extra digits — or if they used

(continued on page 34)

Business calls from out here shouldn't pile up in your office.

© 1990, AT&T.

With ***EXECU-BILL***^{SM} *service* from AT&T, calling card bills don't have to pile up anywhere. Because ***EXECU-BILL*** *service* helps you manage calling card usage with a more efficient way of tracking and monitoring card expenses. Billing is custom designed to work the way your company works, whether you have one local office or many offices across the nation or around the world. So all that tedious paperwork is eliminated.

You specify who receives statements and the level of detail each statement contains. From special reports flagging heavy usage to brief summaries. Your cards can even be personalized with your company's logo.

EXECU-BILL *service* is one more AT&T advantage that you can get with The *AT&T Calling Card* for Business. And only AT&T ties calling card usage to every interstate volume discount plan available such as *AT&T PRO*^{SM} *WATS* and ***MEGACOM***$^{®}$ *WATS*. So regardless of the size of your business, you always get the discounts you deserve.

Your phone system really isn't complete without The *AT&T Calling Card* for Business and ***EXECU-BILL*** *service*. Find out how you can get it free.

Call your AT&T Account Executive or
1 800 222-0400, Ext. 2150.

The *AT&T Calling Card* for Business.
Another AT&T advantage.

AT&T
The right choice.

(continued from page 31)

tone generators — they could save a substantial sum in surcharges. The only drawback was that the traveler had to be in a city where the carrier had a switch or other means to access the carrier network.

In time, carriers converted to longer term travel card networking options, revamping the services to bring them in line with the changing local and long-distance network environment, as well as to make them more profitable as stand-alone services. Carriers began to levy surcharges for travel card calls and, in some cases, charged rates above those for regular direct-dial long-distance. Generally, however, the cost remained below the rate AT&T charged.

Access into the long-distance network is still somewhat limited; 0+ dialing is available on a limited basis for alternative carriers, whenever the phone used is pre-subscribed to that carrier network. Otherwise, 950 and 800 access are still common. Users dial those numbers, receive a network tone, dial the telephone number to be called, receive a second network tone and then input the authorization number.

The effect of competition on the market is remarkable, as the Bell operating companies, MCI Communications Corp., US Sprint Communications Co. and other interexchange carriers have been working to meet and exceed AT&T's standard in the marketplace.

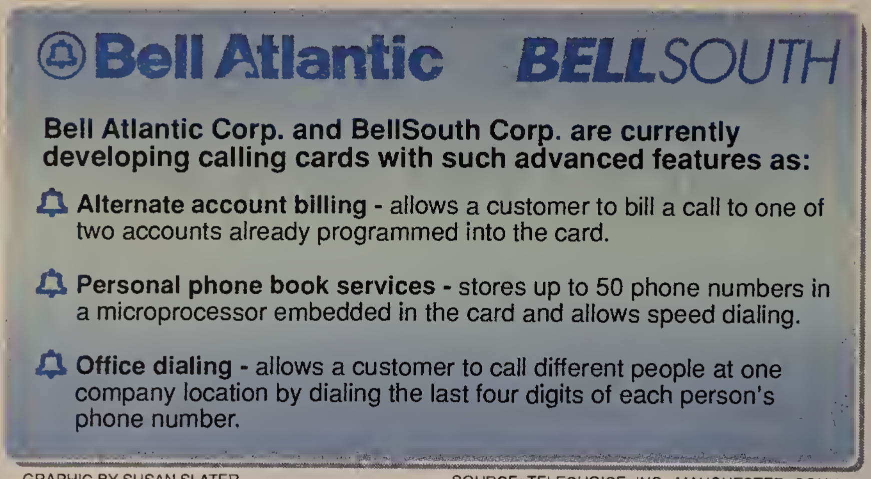
MCI was the first to use the plastic cards that are now so prevalent in the market, and US Sprint has a braille card. Each of the carriers will print custom-designed calling cards with the user company logo on them — Corning Glass Works has cards imprinted with the Pink Panther, for instance. In addition, everyone is adding a host of innovative features and special services based on their calling cards. With these changes, each of the carriers have started differentiating their products from one another's.

Hot topic for the '90s

The biggest issue for 1990 is the merging of calling cards with bank credit cards for customer use. Southern New England Telephone Co. (SNET) was the first in the nation to introduce a combined calling card, charge card and automated teller machine card, called the SNET/People's MasterCard in April 1989. MCI launched its Card Compatibility program back in July 1989 with the introduction of VISAPhone, which allows Visa International, Inc. cardholders to use their existing Visa card to make long-distance calls over the MCI network with billing to their Visa card account. The Visa account number acts as an MCI calling card number.

VISAPhone differs from the US Sprint and AT&T affinity card programs. An affinity card does not make use of an existing Visa card but issues a new card that competes against banks in the credit card business. Affinity cards carry the name of a company or organization that helps promote its use in return for a percentage of the profits earned by the issuing bank.

Smart calling cards



Bell Atlantic Corp. and BellSouth Corp. are currently developing calling cards with such advanced features as:

- **Alternate account billing** - allows a customer to bill a call to one of two accounts already programmed into the card.
- **Personal phone book services** - stores up to 50 phone numbers in a microprocessor embedded in the card and allows speed dialing.
- **Office dialing** - allows a customer to call different people at one company location by dialing the last four digits of each person's phone number.

GRAPHIC BY SUSAN SLATER

SOURCE: TELECHOICE, INC., MANCHESTER, CONN.

US Sprint's affinity card — the Sprint Visa card — is issued through State Street Bank and Trust Co. of Boston. Quietly introduced in late 1989, the Sprint Visa card is a combined Visa credit card and Sprint FONcard. Customers can also pay their FONcard bills with the Visa portion of the card.

US Sprint now offers a braille card.

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But in 1990, AT&T launched the biggest salvo yet in the calling card wars: the AT&T Universal Card, a combined Visa/MasterCard and AT&T Calling Card. These new cards bear the AT&T name and corporate logo but are issued by the Universal Bank of Columbus, Ga. The AT&T Universal Card is also an affinity card.

Carriers said they are hoping to garner additional revenues through these affinity agreements. However, such cards can raise problems, too. Other bank card issuers, as well as American Express Co., have begun to view their long-distance vendors as competitors in the credit card/charge card field and are switching traffic to carriers without affinity programs. For these reasons, MCI has been signing many partnership agreements with various banks.

BOC and independent cards

The BOCs and independent telephone companies also offer calling cards, many of which have been around as long as their counterparts offered by long-distance companies.

While offering much the same functionality as long-distance carriers' cards, the local exchange companies are hindered in the calling card market in the same way they are hindered from offering general long-distance telephone services — they are prohibited from carrying calls from one local access and transport area to another. These calls must be carried by a pre-subscribed long-distance carrier. In cases in which an inter-LATA call is placed, the local telephone company must transfer the call to the pre-subscribed inter-LATA carrier for completion.

As a result, the local exchange companies are touting the enhanced functionality of their cards. For instance, Bell Atlantic Corp. and BellSouth Corp. are working to develop smart cards that use special pay phones and offer advanced features (see graphic).

Early tests of these microprocessor-based cards have been successful, leading some industry gurus to speculate that microprocessors will replace magnetic strips on calling cards in the near future. The microprocessors interact with software and hardware in the pay phone equipment, just as magnetic tape strips work with magnetic strip-reading phones.

The development of calling cards and the entire equal access process is tied to regulatory developments. For example, a vast proportion of calling card calls are made from pay phones; therefore, AT&T's competitors were concerned about the inherent bias of pay phone owners toward AT&T.

Until 1989, all interexchange 0+ calls from a pay phone were sent to AT&T because it had always been done that way. Users wanting to access any carrier other than AT&T had to dial a 950 or 800 number.

However, in late 1988, U.S. District Court Judge Harold Greene ordered the BOCs to stop favoring AT&T in pay phone access. After much discussion, Greene established an interim process in which all public pay phones would be pre-subscribed to a selected interexchange carrier, which meant that all interexchange long-distance calls from those phones would be processed by the pre-subscribed carrier.

In addition, Greene ruled that the proprietor of the premises where the phone was located would decide which carrier should be pre-subscribed to the pay phone. Privately owned pay phones were not subject to Greene's order.

Unfortunately for AT&T's competitors, this ruling has done little to alleviate the bias. The only positive effect for AT&T's competitors has been that, in many cases now, AT&T customers must dial 10288 before placing a call from a phone that is not pre-subscribed to AT&T. However, AT&T is still favored by 75% of the nation's pre-subscribed pay phones, so odds are that the customer is just dialing 0 and the number anyway.

Calling card number validation is a key issue in calling cards. Proper validation can vastly limit fraud and save the carrier, and the user, large sums of money. To validate calls, local exchange companies must interconnect with a validation firm's data base, a process in which network signaling plays an important role.

Signaling System 7 (SS7) is used by the long-distance carriers to compare validated numbers with those contained in a master customer data base. Local exchange carriers are using similar signaling systems to access their respective data bases.

The BOCs are awaiting the development of the all-encompassing national Line Information Data Base (LIDB), which will act as a nationwide validation system. Each of the BOCs has been developing its own LIDB for interconnection in 1991 or 1992. These interconnected data bases will allow any BOC to validate the card of any other BOC; likewise, it will allow the interexchange carriers to have access to the BOC numbers for validation as well.

A look at the variety of calling card options

Travel cards are marketed as either stand-alone products or as part of another service. Sometimes, they also have their own discount schedules for volume calling or their rates may be included as a part of a related long-distance offering such as WATS or virtual net services.

Calling card users have a variety of options:

- **Stand-alone products.** These cards have their own account, separate from any installed line accounts. Indeed, a customer does not have to be a subscriber to any other long-haul service to have a calling card under these programs.
- **WATS-based products.** These cards are integrated with carrier WATS programs. As such, long-distance usage through travel cards usually counts toward meeting WATS volume discount levels, resulting in higher discounts under the WATS plan. With other WATS-based card products, however, a different schedule of discounts may apply to the calling card traffic part of the bill.
- **Virtual network-based products.** The top-of-the-line in calling card services, virtual network cards offer users direct access from a remote location into the varied functionality of virtual net services. Features such as call screening and forced on-net calling allow the telecommunications manager to control how calling cards are used. Managers can assign certain calling restrictions to each card, such as on-net only, domestic-only and international. Users are also offered several access options.

Usage of virtual network cards is typically included with the virtual network discount plans, resulting in substantial discount levels for card calling. AT&T's AT&T Card, MCI Communications Corp.'s MCI Card and US Sprint Communications Co.'s FONcard all have virtual net counterparts.

Virtual network cards are the top of the line.

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- **Facsimile net-based products.** Fax net cards offer functionality similar to virtual network cards. These cards allow a user to access and use fax net offerings from the road. Once users have accessed the fax network with a travel card, they can perform most of the same fax network tasks as when in the office. From remote locations, users can upload and download fax messages, change routing lists and request report information.
- **Credit/calling cards.** Hailed as the cards of the future, these multipurpose cards offer users both telephone calling and banking privileges. These cards are marketed as a one-stop solution for users. Thus, users could effectively trade in their Visa card, automated teller machine card and telephone calling card for a single multiuse credit card.

— *Daniel Briere*

Similarly, many small independent telephone companies are using an SS7 network run by U.S. Intelco Networks to give their cards much of the same functionality interexchange carrier and BOC cards have. These independent carriers are placing the numbers of their calling card subscribers into the U.S. Intelco data base for storage and access. The independent telephone company issues its own calling cards and receives payments each time a long-distance carrier or other phone company sends a computer inquiry to validate the calling card. Through this system, small telephone companies are able to launch calling card products for nationwide use.

Validation problems

Greene's pay phone pre-subscription ruling may help alleviate the problems of all 0+ calls placed from pay phones carried by AT&T. However, it does not help AT&T's competitors to promote their own calling cards as replacements for the AT&T Calling Card. The reason again lies in validation.

For years, the BOC and AT&T card numbers either had a main 10-digit billed account number plus a four-digit personal identification number (PIN) or a 10-digit AT&T regional accounting office number plus a four-digit PIN.

AT&T's competitors use different formats. It is a relatively simple task for a competitor to accept and bill for calls using the AT&T/BOC residential numbering scheme — the billing number is in the calling card number. But it's not so easy with corporate billing and proprietary formats; for example, there's no way for MCI to trace the numbers of US Sprint users. Thus, the entire process still favors AT&T's formats.

> The entire process still favors AT&T's formats.
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The BOCs have said that if AT&T's competitors want to convert their numbers to the BOC/AT&T format, the BOCs will store the interexchange numbers in their data bases. However, this blurs the distinction among the various carriers' cards. Each interexchange carrier's card would be accepted on any competitor's interexchange network, thus defeating a primary reason for having carrier-specific numbers — to encourage greater traffic over a particular carrier's network.

Another solution is for all of the carriers — AT&T, MCI, US Sprint and others — to change to an entirely new numbering system, under which all calling card numbers would be unique and each number would be associated with a particular carrier. However, there are nearly 100 million cards in circulation; replacing each of these would cost the carriers an enormous amount of money.

The carriers could also convert to an existing international, 19-digit calling card standard. However, this standard requires five digits more than are currently used.

There are no easy solutions to the future of calling card validation. When the

(continued on page 36)

New services in the cards

AT&T's competitors are seeking to distinguish themselves from the market leader. Some unique products being developed for travel card users are:

- **US Sprint Communications Co.'s braille version of the Sprint FONcard.** This card offers more accessible long-distance telephone service to the blind. All numbers necessary to complete a call are encoded on the card in braille. There is no extra charge for the braille FONcard, which also features free directory assistance and a free over-the-phone bill review.
- **US Sprint's voice-activated calling card, Voice FONcard.** This card bypasses dialed digits in favor of voice commands. For example, a user could say, "This is Mark Langner. I wish to call home." The net would verify Langner's voice against a digital record, look up his number and place the call.
- **Telecom*USA, Inc.'s calling card.** This card allows users direct access to enhanced services such as voice mail and conference calling services. If a person cannot be reached, the caller can activate a voice mail system to store a message for later automatic transmission to the number called.
- **MCI Communications Corp.'s MCI Fax Card.** This offering gives users the same functionality on the road as at the home office, which is critical for downloading facsimile messages from personal mailboxes to a fax machine at a hotel or other remote office. Additional authorization and security code features can provide an important safety buffer to ensure that unauthorized persons do not read fax messages.

— *Daniel Briere*

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RBHC calling and travel cards

Company	Product	Method of access	Instant credit available for misdialed calls	Account codes available	Call detail	Installation charges/ monthly charges	Usage fees	Volume discounts	Magnetic stipe for reader phones	Vanity cards	Cards accepted by	Own network accepts cards	Operator services/ language available
Ameritech **Chicago** **Contact local service office**	America's Calling Card	0+number	No, credit on bill	Yes	Included as part of DDD/ WATS bills	$0/$0 for standard service; marginal charges for specialized billing	BOC transport rates plus surcharge (2)	None	Yes	No	All major interexchange carriers, all RBHCs	AT&T, other BOCs	Third-party billing, collect calling, conference services, person-to-person/ None
Bell Atlantic Corp. **Arlington, Va.** **(800) 235-0100**	Bell Atlantic I.Q. Card	0+number	Yes	No	Included as part of DDD	$0/$0 for standard service	BOC transport rates plus surcharge (5)	None	Yes	No	All major interexchange carriers, all RBHCs	AT&T, other BOCs	Third-party billing, collect calling, conference services, (1) person-to-person/ None
BellSouth Corp. **Atlanta** **Contact local business office**	Calling Card	0+number	No	Yes	Included as part of DDD/ WATS bills	$0/$0	BOC transport rates plus surcharge (3)	None	Yes	No	All major interexchange carriers, all RBHCs	AT&T, American Express, Visa, Discover, Diners Club, MasterCard	Third-party billing, collect calling, conference services, (1) person-to-person/ Spanish
Nynex Service Co. **White Plains, N.Y.** **In N.Y.: (800) 863-8663** **In New England: (800) 922-8383**	Calling Card	0+number	Yes	No	Included as part of DDD/ WATS bills	$0/$0	BOC transport rates plus surcharge (4)	None	Yes	No	All major interexchange carriers, all RBHCs, alternative operator service firms AT&T, American Express, Visa, Discover, Diners Club, MasterCard	AT&T, American Express, Visa, Discover, Diners Club, MasterCard	Collect calling, conference services, (1) person-to-person, third-party billing/ None
Pacific Bell **San Francisco** **(800) 621-0430**	Pacific Bell Calling Card	0+number	Yes	Yes: NRC, $0; MRC, $.40 per call	Included as part of DDD/ WATS bills or a separate bill if used with account codes	$0/$0 for standard service	BOC transport rates plus surcharge of $.40 per call	Yes, call bonus plan	Yes	Yes, costs based on individual basis	All major interexchange carriers, all RBHCs	AT&T Card, Affinity interexchange carriers cards	Third-party billing, collect calling, conference services, (1) person-to-person, one number calling card/Spanish, Chinese (Cantonese and Mandarin), Korean, Vietnamese
Southern New England Telephone Co. **New Haven, Conn.** **Contact local business office**	SNET Calling Card	0+number	Yes	No	Included as part of DDD/ WATS bills	$0 for line-based cards, $3 for nonline-based cards/ $0 for standard service	BOC transport rates plus surcharge of $.24 per intra-LATA call, $3 for person-to-person calls	No	Yes	No	All major interexchange carriers, all RBHCs, all Canadian, all 809 area code companies	AT&T Card, Diners Club, independent local exchange carrier cards	Third-party billing, collect calling, conference services, (1) person-to-person, handicapped, assisted emergency calls/Spanish
Southwestern Bell Telephone Co. **St. Louis** **Contact local business office**	SelectCard	0+number	Yes	No	Included as part of DDD/WATS bills	$0/$0 for standard service	BOC transport rates plus surcharge of $.30 per call; initial period for calls, 1 min	No	Yes	No	All major interexchange carriers, all RBHCs	AT&T Card, Diners Club, independent local exchange carrier cards	Third-party billing, collect calling, person-to-person/ Spanish (in Texas)

DDD = Direct distance dialing
MRC = Monthly recurring charge
NRC = Nonrecurring charge

FOOTNOTES:
(1) Intra-LATA only.
(2) For calls within its territories, surcharges are: Illinois, $.35; Indiana, $.55, Michigan, $.24; Ohio, $.20; and Wisconsin $.55. Calls handled by an interexchange carrier are subject to that carrier's rates.
(3) Surcharge varies by state for intra-LATA calling.
(4) Intra-LATA surcharge: New York, $.30; Massachusetts, $.44; Maine, $.60; New Hampshire, $.35; Rhode Island, $.55; and Vermont, $.55
(5) Surcharge, tariffed rate different for each state.

This chart includes a representative selection of vendors in RBHC calling and travel cards. Most vendors offer other RBHC calling and travel cards, and many vendors not included offer a full range of competitive products.

SOURCE: TELECHOICE, INC., MANCHESTER, CONN.

(continued from page 35)

LIDBs come on-line, which is supposed to be at the end of 1991 or beginning of 1992, some of the problems involved with calling card validation will be solved. However, with each problem that is solved, more seem to appear.

With all the options carriers offer for calling card needs, it's difficult for telecommunications buyers to make sure they are getting the best deal. Some things to consider are:

■ **Watch for the deals.** With multiuse cards, the features of the card as a bank card — though not unreasonable — do not make it competitive with the best bank cards on the market. AT&T's current interest rate is 8.9% above the prime rate, or 18.9% as of June 1. The AT&T card has no annual fee during the charter period. In contrast, one of the best credit card rates at the same time in the Northeast was 13.5%, with no annual fee.

Also, AT&T's initial discounts on Universal Card traffic, set at 10% for 1990, are not equal to those available through AT&T's other calling card options. For example, Software-Defined Network calling card usage is often discounted more than 25%.

> Network managers should train employees to check which long-distance company is carrying the travel card call.
>
> ▲▲▲

■ **Watch out for alternative operator services.** Network managers should train employees to check which long-distance company is carrying the travel card call.

As an example, AT&T this year placed a recording on its network — played immediately after the initial tone — that identified itself as the carrier. A caller wishing to use AT&T and who does not hear the tone can either hang up and dial the equal access code plus the telephone number — for example, 10288, 0 and then the number — or wait for an operator to answer. If an operator comes on the line, ask for either a rates operator to verify the costs or for the carrier of choice.

■ **Watch for pirates.** Calling card numbers are often stolen as people use their cards. When dialing at a pay phone, users should cover the keypad with one hand to protect the security of the code or use card-reader phones.

■ **Watch for shortcuts.** Some carriers have special deals that bypass surcharges on calls. MCI's Around Town option, for instance, allows for 950 access in a subscriber's hometown with only a 25-cent surcharge.

■ **Watch for 800 applications.** Many customers could substitute 800 service for calling card service if the traffic involves making a lot of calls to the home office or another specific site. Users should analyze monthly bills for calling patterns.

Calling cards will take on an increasingly important role in providing users with remote access to carrier networks, including the carrier's enhanced services and offerings.

In addition, the trend toward integrating various types of cards into super cards will continue as data bases are linked and the necessary signaling systems are implemented between the carriers and other service providers to add functionality to the card.

(continued on page 38)

Interexchange carrier calling and travel cards (continued on page 38)

Company	Product	Access availability	Method of access	Instant credit available for mis-dialed calls	Account codes available	Call detail	Installation charges/ monthly charges	Usage fees	Discount calling plans	Magnetic strip for card	Vanity cards	Card accepted by	Own network accepts cards	Operator services/ languages available
AT&T Basking Ridge, N.J. (800) 225-5288	AT&T Calling Card	50 states, Puerto Rico, Virgin Islands, Mexico, Canada and over 260 other foreign countries and territories	In the U.S.: 0 + number or 10-ATT-0 + number; from a foreign country: USADirect Service and/or in-country operator (use 1M number on calling card)	Yes	No	Included as part of DDD/ WATS bills	None/none	DDD rates plus $0.80 service charge per call	Yes	Yes	No	All major IXCs; all BOCs; over 260 foreign countries and territories	AT&T calling cards; BOC cards; commercial credit cards from select locations	General assistance; collect calls, billed-to-third-number calls; person-to-person calls; calling card calls; services for the deaf/AT&T Espanol
	AT&T Calling Card (for customers without telephone service)	50 states, Puerto Rico, Virgin Islands, Mexico, Canada and over 260 other foreign countries and territories	In the U.S.: 0 + number or 10-ATT-0 + number; from a foreign country: USADirect Service and/or in-country operator (use 1M number on calling card)	Yes	No	Separate bill for calling card	None/none	DDD rates plus $0.80 service charge per call	No	Yes	No	All BOCs; over 260 foreign countries and territories	AT&T calling cards; BOC cards; commercial credit cards from select locations	General assistance; collect calls, billed-to-third-number calls; person-to-person calls; calling card calls; services for the deaf/AT&T Espanol
	AT&T Call Me Card (1)	50 states, Puerto Rico, Virgin Islands, Mexico, Canada and 79 other foreign countries	In the U.S.: 0 + number or 10-ATT-0 + number; from a foreign country: USADirect Service	Yes	No	Included as part of DDD/ WATS bills	None/none	DDD rates plus $0.80 service charge per call	Yes	Yes	No	All major IXCs; all BOCs; 79 foreign countries	AT&T calling cards; BOC cards; commercial credit cards from select locations	General assistance, collect calls, billed-to-third-number calls; person-to-person calls; calling card calls; services for the deaf/AT&T Espanol
	AT&T International Card Products (2)	50 states, Puerto Rico, Virgin Islands, Mexico, Canada and over 260 other foreign countries and territories	In the U.S.: 0 + number or 10-ATT-0 + number; from a foreign country: USADirect Service and/or in-country operator (use 1M number on calling card)	Yes	No	Included as part of DDD/ WATS bills; separate bill for calling card	None/none	Domestic: DDD rates plus $0.80 service charge per call; international: Operator Assisted Station rates; initial 3-minute period plus additional minute	Yes	Yes	No	All major IXCs; all BOCs; over 260 foreign countries and territories	AT&T calling cards; BOC cards; commercial credit cards from select locations	General assistance; collect calls, billed-to-third-number calls; person-to-person calls; calling card calls; services for the deaf/AT&T Espanol
	AT&T Network Remote Access-Plus, "The SDN Card"	50 states, Puerto Rico, Virgin Islands, Mexico, Canada and over 260 other foreign countries and territories	In the U.S.: 0 + number, 10-ATT-0 + number or customer-specific 800 number; from a foreign country: USADirect Service and/or in-country operator (use 1M number on calling card)	Yes	Yes: NRC, $200 per network; MRC, $400 per network	Included as part of DDD/ WATS bills or separate card bill; both available	None/none	Software-Defined Network rates plus service charge per call	Yes, ranging from 5% to 32%; surcharges included in calculation of discount	Yes	Yes	All BOCs; over 260 foreign countries and territories	Not applicable	General assistance; collect calls, billed-to-third-number calls; person-to-person calls; calling card calls; services for the deaf/AT&T Espanol
	AT&T Execu-Bill Service	50 states, Puerto Rico, Virgin Islands, Mexico, Canada and over 260 other foreign countries and territories	In the U.S.: 0 + number or 10-ATT-0 + number; from a foreign country: USADirect Service and/or in-country operator (use 1M number on calling card)	Yes	No	Separate bill for card calling	No charge when free PC-based setup package is used/varies from $0 to $1,250, depending on number of cards, bills and length of contract	DDD rates plus $0.80 service charge per call	Yes	Yes	Yes	All BOCs; over 260 foreign countries and territories	AT&T calling cards; BOC cards; commercial credit cards from select locations	General assistance; collect calls, billed-to-third-number calls; person-to-person calls; calling card calls; services for the deaf/AT&T Espanol
	AT&T Universal Card	50 states, Puerto Rico, Virgin Islands, Mexico, Canada and over 260 other foreign countries and territories	In the U.S.: 0 + number or 10-ATT-0 + number; from a foreign country: USADirect Service and/or in-country operator (use 1M number on calling card)	Yes	No	Separate bill; calls billed to AT&T Universal Card appear on AT&T Universal Card statement, which includes both purchases and calls	None/none	10% off AT&T Calling Card rates (reference above)	No	Yes	No	Anywhere AT&T Calling Card or Visa/ MasterCard are accepted	AT&T calling cards; BOC cards; commercial credit cards from select locations	General assistance; collect calls, billed-to-third-number calls; person-to-person calls; calling card calls; services for the deaf/AT&T Espanol
MCI Communications Corp. Washington, D.C. (800) 888-0800	MCI Card	50 states, Puerto Rico, Virgin Islands, Canada and 21 other foreign countries	800 number, 950 number	Yes	No	Separate bill for card calling or included as part of DDD/ WATS bills	None/none	DDD rates plus $0.75 surcharge per charge, $0.25 Around Town 950 Access or $1.25 international	Yes; separate volume discount for card	Yes	Yes, costs vary	MCI	MCI Card	General assistance, station-to-station/ Spanish

DDD = Direct distance dialing
DTMF = Dual-tone multifrequency
IXC = Interexchange carriers
MRC = Monthly recurring charge
NRC = Nonrecurring charge
VPN = US Sprint's Virtual Private Network

FOOTNOTES:
(1) Only allows calls back to line number to which card is subscribed.
(2) For international calls:
  (a) U.S. expatriates and military personnel living overseas can use AT&T Card and have charges billed to MasterCard International, Inc. or Visa International, Inc. (issued by U.S. bank) or American Express Co.
  (b) German citizens can receive an AT&T Card and have it billed on their Diners Club Germany account or Visa account (through Banco de Bantender in Germany).
  (c) Through Joint Logo Program, AT&T provides post, telegraph and telephone administration with AT&T account number to be put on card with both companies' logos on it. Charges appear on foreign customers' PTT bill. Available in Australia, Chile, Denmark and Philippines.
  (d) Any AT&T cardholder can place AT&T Card calls from the U.K. and Japan to other countries. Billed at Kokusai Denshin Denwa, Ltd. (Japan) and British Telecom International, Inc. (U.K.) rates. Charges appear on AT&T bill.
  (e) USADirect Service allows customers to place AT&T Card calls or collect calls to the U.S. using an AT&T operator. Available in 79 countries.
(3) Management reports available; NRC: $50 to $150, MRC: $10 to $50.
(4) Entire FONcard bill can be paid via Visa, MasterCard, Discover or Diners Club.
(5) MCI Card Compatibility is available through enrolled institutions offering bank card services.

This chart includes a representative selection of vendors of interexchange carrier calling and travel cards. Many vendors not included offer a full range of competitive products.

SOURCE: TELECHOICE INC., MANCHESTER, CONN.

Interexchange carrier calling and travel cards (continued from page 37)

Company	Product	Access availability	Method of access	Instant credit available for misdialed calls	Account codes available	Call detail	Installation charges/ monthly charges	Usage fees	Discount calling plans	Magnetic strip for card	Vanity cards	Card accepted by	Own network accepts cards	Operator services/ languages available
MCI (continued)	MCI Card Compatibility (allows long-distance on MCI Card through standard bank credit card) (5)	50 states, Puerto Rico and Virgin Islands	800 number	Yes	No	Total calling bill included as line item on bank card statement; call detail provided by MCI separately	None/none	Card Compatibility rates plus $0.70 surcharge per domestic and $0.75 per Canadian call, $1.25 international	Yes, 2% on calling more than $100, additional discounts available for international calling	Yes	No	MCI	Visa, MasterCard (Fall 1990)	None/none
	MCI Fax Card	50 states	800 number	No	No	Included as part of MCI Fax bill	None/none	Fax rates plus $0.55 surcharge per domestic call, $1.25 international	Yes, part of standard fax discount structure	No	No	MCI Fax	MCI Fax Card	General assistance on non-DTMF time-out (Oct. 1990)/none
	MCI Vision Card	50 states	800 number	No	No	Included as part of MCI Vision bill	None/none	$0.20 per min, billed in 6-sec increments for domestic calls; separate country-specific international rates billed in 6-sec increments plus surcharge: $0.60 per domestic and Canadian calls, $1.25 international	Yes, card calling part of standard Vision discount structure	No	Yes, costs vary	MCI	MCI Card	General assistance on non-DTMF time-out (Oct. 1990)/none
	MCI Vnet Card	50 states, Puerto Rico, Virgin Islands	800 number	No	No	Separate bill for card calling included as part of Vnet bill	None/none	Vnet rates plus surcharge: $0.25 per domestic call, $1.25 per international call	Yes, included in Vnet volume discount	No	Yes, no charge	MCI	None	Operator-completed calls available for non-DTMF access telephones/none
Telecom*USA, Inc. Atlanta (800) 728-3888	Telecom*Card	50 states	800 number	Yes	Yes, NRC: $15 to $150, MRC: $5 to $15 per account	Separate bill for card calling or included as part of DDD/WATS bills (3)	None/none	DDD rates plus $0.30 surcharge	Yes, contributes to corporate account billing programs	No	Yes, costs vary on individual-case basis	Telecom*USA	Visa, Master-Card, American Express, Diners Club, BOC cards, Telecom*Card	Collect calling, conference services (1), person to person, directory assistance, station to station/ Spanish (limited), French (limited)
US Sprint Communications Co. Kansas City, Mo. (800) 276-6773	US Sprint FONcard	50 states, Puerto Rico, Virgin Islands, Canada and 14 other foreign countries by 4Q 1990	800 number, equal access	Yes, credit also reflected on bill	Yes; non-validated, NRC: $0, MRC: $5 per account; validated: NRC: $20 per account, MRC: $7 to $200, depending on number of codes	Separate bill for card calling or included as part of DDD/WATS bills	None/none	DDD rates plus $0.75 surcharge per call, $3.50 person to person, $1.75 operator assisted, collect, $0.25 for VPN FONcard	Yes, contributes to various DDD/ WATS/ VPN discount plans	Yes	Yes, no charge	US Sprint	BOC cards, FONcard (4)	Third-party billing, collect calling, conference service (1), person to person, directory assistance, international outbound/ Spanish and Japanese

DDD = Direct distance dialing
DTMF = Dual-tone multifrequency
IXC = Interexchange carriers
MRC = Monthly recurring charge
NRC = Nonrecurring charge
VPN = US Sprint's Virtual Private Network

FOOTNOTES:
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(a) U.S. expatriates and military personnel living overseas can use AT&T Card and have charges billed to MasterCard International, Inc. or Visa International, Inc. (issued by U.S. bank) or American Express Co.
(b) German citizens can receive an AT&T Card and have it billed on their Diners Club Germany account or Visa account (through Banco de Bantender in Germany).
(c) Through Joint Logo Program, AT&T provides post, telegraph and telephone administration with AT&T account number to be put on card with both companies' logos on it. Charges appear on foreign customers' PTT bill. Available in Australia, Chile, Denmark and Philippines.
(d) Any AT&T cardholder can place AT&T Card calls from the U.K. and Japan to other countries. Billed at Kokusai Denshin Denwa Ltd. (Japan) and British Telecom International, Inc. (U.K.) rates. Charges appear on AT&T bill.
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This chart includes a representative selection of vendors of interexchange carrier calling and travel cards. Many vendors not included offer a full range of competitive products.

SOURCE: TELECHOICE, INC., MANCHESTER, CONN.

(continued from page 36)

Greene said he favors the deployment of a local exchange carrier data base network in which the local exchange carriers can send all 0+ calls to the interexchange carrier pre-subscribed at the billing address of the party accepting or being billed for the call.

Thus, if a Boston user makes a call from a train station in New York, the BOC would query its data base to identify the billed party's home office carrier.

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This ability is true to the concept of equal access — being able to choose a preferred long-distance carrier for the placement of all calls. A pay phone owner's pre-subscribed carrier will eventually carry only those calls paid for with a user's pocket change at the time the call is made. ◼

Letters

continued from page 29

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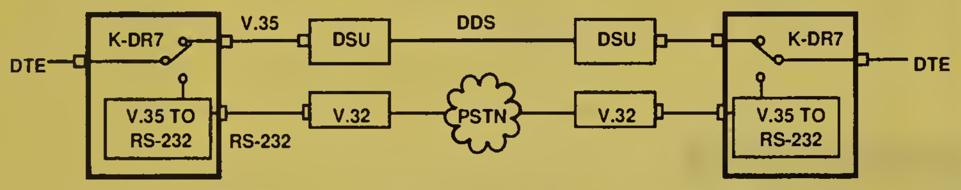

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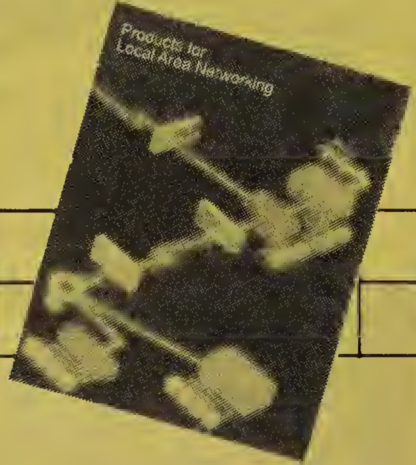

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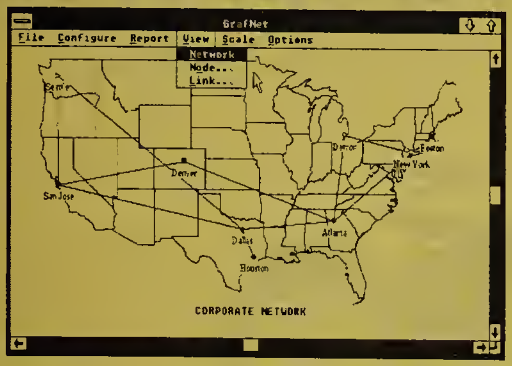

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ICA salary study shows trends

continued from page 1

"Network professionals are faring better than workers in most industries because of the law of supply and demand," said Deborah Thobe, principal and telecommunications compensation specialist at the Dallas office of William M. Mercer, Inc., an international human resources management consulting firm.

The survey, which was conducted by Mercer, is based on data collected from more than 1,000 network professionals at ICA's 97 member companies, which represent a cross section of industries.

In addition to compensation, the survey profiles the educational backgrounds and job responsibilities of net professionals in 10 job categories (see chart). It also examines the placement of network departments within corporate reporting structures.

Top net execs fare best

The survey shows that senior net executives received higher salary increases than most other net professionals, posting a 7.9% pay hike from 1989 to 1990. Senior net executives now receive an average salary of $73,700 and earn average annual bonuses of more than $13,000.

Senior net executives — a category that includes such titles as vice-president and director — are responsible for charting the strategic network direction for their companies and for ensuring that net departments achieve strategic goals and objectives.

Thobe said compensation for senior network executives is greatly influenced by the size of the corporate communications budget.

While the average salary for all senior managers is $73,700, those who oversee network budgets exceeding $50 million earned considerably more — $93,100 on average.

Those executives overseeing budgets between $10 million and $50 million earn an average of $74,700, while senior net executives with budgets under $10 million earn $67,800.

In addition, job titles for executives in this category also have a direct impact on salary. Senior net executives with the title of vice-president took home an average yearly salary of $84,500. Those holding the title of director had an average 1990 income of $76,400, while those with the title of manager averaged $69,500 in salary.

These top-level network executives supervised an average of 29 employees, and more than half (57%) reported having responsibility for international nets.

In contrast, second-level net managers averaged $58,600 in salary for 1990, a 7.1% increase from 1989. They also garnered yearly bonuses that averaged $6,800.

Salaries by job title

Job level	1989	1990	Percentage change
Top network executive	$68,100	$73,700	7.9%
Manager	$54,600	$58,600	7.1%
Senior project engineer	$50,100	$53,300	6.2%
Supervisor	$40,300	$42,900	7.1%
Senior analyst	$38,200	$41,400	7.1%
Senior technician	$33,000	$35,200	6.5%
Intermediate analyst	$29,500	$32,700	7.7%
Intermediate technician	$25,400	$27,200	6.2%
Junior analyst	$24,600	$27,200	9.6%
Junior technician	$21,000	$22,600	7.3%
Overall average increase			7.1%

Percentage change figures may not be exact because results were calculated only for respondents who submitted salary figures for both 1989 and 1990.

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: WILLIAM M. MERCER, INC., DALLAS

These managers typically develop short- and long-term network plans, oversee most network projects and have multiple areas of responsibility, including operations and maintenance. They oversee an average of 14 employees, and less than half (40%) reported that they had international networking responsibility.

Salaries for these managers are less contingent on network expenditures than on the scope of their responsibilities within the department and the region of the country, the survey stated.

Managers in the Northeast had the highest average salaries ($69,900), followed closely by managers on the West Coast ($67,400). Managers with the lowest salaries hailed from Western states ($52,400) and the mid-Atlantic region ($55,800).

Other findings

The survey showed that most net professionals do not specialize in a single technical area but are well versed in a variety of network disciplines including administration, design, implementation and maintenance, as well as operations and marketing.

"The career path in [networking] is not as well defined as in systems processing," Thobe said. "[Network] people tend to jump around among operations, maintenance and engineering, and then go to implementation and design areas."

Technical oversight

The survey also revealed that a growing number of network departments are reporting to technical groups, such as MIS or corporate information technology, rather than to an administrative unit. This demonstrates the growing importance of networking in the eyes of top management, Thobe said.

Currently, 83% of the telecommunications departments in the survey report to either corporate information technology groups or MIS units. In contrast, only 50% of network departments in 1984 reported to a technical group.

Polaroid uses Apple's DAL

continued from page 6

the data or sends the dealer information back to the agent.

"DAL is a superset of SQL, which is nice because you don't have to deal with different languages," Crawford said. "If you know SQL, you can pick up DAL."

When the system was first cut over about a year ago, Polaroid ran into a few minor problems embedding DAL into Hypercard applications and tuning the VAX-based DAL server software, Crawford said. "There were some teething problems, but that was to be expected. We were a beta site." Apple helped Polaroid quickly resolve those problems, and the new system has been working fine ever since.

Network setup

The 30 Macintosh SEs in Polaroid's customer service center here are linked to two local-area networks, a coaxial cable-based Ethernet and a twisted-pair-based LocalTalk net. The Ethernet is the primary LAN, while the slower 230K bit/sec LocalTalk LAN ensures that the Macintoshes can still communicate if the Ethernet fails, Crawford said.

Polaroid also has a Vitalink Communications Corp. bridge attached to both the Ethernet and LocalTalk LANs in the customer service center.

Data destined for the VAX is shipped over the Ethernet or LocalTalk to the Vitalink bridge. That bridge is linked via the 56K bit/sec circuit to a T-1 multiplexer at Polaroid's engineering facility near the Massachusetts Institute of Technology, which is located a short distance from the customer service center.

The T-1 multiplexer combines the 56K bit/sec circuit onto a leased T-1 circuit that routes data to the VAX housed at Polaroid's Waltham manufacturing site.

ALR intros line of superservers

continued from page 4

chitecture are also available.

The top-of-the-line 80486-based BusinessServer 33/4e comes with a 32-bit Small Computer System Interface (SCSI) controller that operates as an EISA bus-master board.

The server supports as many as five disk channels and can be configured with four SCSI controllers and one Enhanced Small Device Interface controller. The resulting disk subsystem supports the disk mirroring, disk duplexing and disk spanning capabilities of NetWare 386.

ALR, along with other system vendors such as AT&T and IBM, has elected to use a parallel SCSI disk subsystem. This contrasts with the proprietary, mainframe-like disk array subsystems companies such as Compaq introduced in the first superservers.

Vic Sangveraphunsiri, vice-president of systems engineering at ALR, said, "If the server is dealing with a lot of small records, a disk array will give the best performance. But where a server-based data base is reading and writing a lot of big files, multiple interleaved SCSI controllers with fast drives will do as well as or better than disk arrays."

Also, SCSI controllers support any standard SCSI device, including tape and optical drives, while disk array subsystems support only a certain type of disk drive.

The BusinessServer 33/4e comes with 8M bytes of system memory, expandable to 128M bytes, and 128K bytes of cache memory. The machine's memory architecture includes a 64-bit memory bus that provides twice the bandwidth of the typical 32-bit EISA machine. This bus has a single 64-bit expansion slot that supports a proprietary memory expansion card.

The BusinessServer 33/4e also has six 32-bit EISA slots, one 16-bit ISA slot and one 8-bit ISA slot. Prices start at $19,995 for a minimally configured system with one 330M-byte drive.

Top 3Com execs talk strategy

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some time this year on that from 3Com."

For his part, Krause tried to lay to rest any lingering questions people might have about who is in charge at 3Com these days. "Eric [Benhamou] is going to be running this company; the Bill and Bob show is over," said Krause, referring to himself and company founder Bob Metcalfe, who retired in June. "It took us through the 1980s, and now it's the Eric and Les [Denend] and Bob [Finnochio] show. They're going to take 3Com through the 1990s.

"These people are very capable leaders," Krause said.

Krause also made it clear that he expects them to lead an *independent* 3Com into the future. Poor stock performance earlier this year made the company a takeover target, but when asked what was going on with respect to mergers, Krause responded with a flat "nothing."

"Our identity states that we intend to remain an independent global data networking company," Krause said. "I think we've made it clear that we don't have an interest in being acquired.

"But we are a visible company, and we've probably been on every major company's dance card. It's nice to feel wanted, but I think our financial performance and our recent stock performance is putting a lot of the merger rumors to rest."

DEC looks inward for staff

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program's six-person steering committee and show that they know how to use a VAX terminal.

The courses are taught by instructors from DEC's information systems training group and its educational services group, the latter of which provides training to DEC's external customers. In addition, the advanced course invites network experts in the field, as well as business professors at a nearby college, to serve as guest instructors.

The basic course, which runs one week a month for 10 consecutive months, provides instruction on DEC's network technology and how that technology is applied in DEC's own communications environment, Megna said.

Specifically, it provides an overview of networking fundamentals, including the Open Systems Interconnection model, Ethernet networks, network management, network troubleshooting and voice communications. It also teaches financial analysis, negotiating skills, project management and presentation techniques. Finally, network managers at DEC are invited to discuss their jobs and challenges with students, Hall said.

The advanced course, which runs one week per quarter for two years, examines networking trends outside of DEC. Course topics include integrated voice and data communications, T-1 networking, computer protocols and architectures, and computer security.

In addition, students attend a two-week residential program at Babson College in Wellesley, Mass., where they receive instruction in advanced business and management skills from business professors.

Firms pitch CMIP

continued from page 1

set, respectively, that define the method by which OSI management systems communicate and the services they provide.

As users migrate to full-blown OSI networks, they should be able to keep the same management systems and swap out only the transport protocols, proponents of the strategy said.

Although it will take closer scrutiny to be sure, it appears the proposals have merit, according to Laurie Bride, manager of network architecture at Boeing Computer Services Co.

"I would much prefer to see the investment and the experience going into the use of the OSI management protocols, even if it's for managing a proprietary network," Bride said. "That means it'll be all the better when they start providing the management tools for OSI."

Such sentiments are not unanimous, however. Vendors that have invested heavily in OSI, such as AT&T and Digital Equipment Corp., see the strategy as counterproductive and believe it could prolong migration to OSI.

Four flavors

IBM has proposed to the OSI/NM Forum the use of CMIP/CMIS over SNA, which could expand the range of devices under NetView's control by giving other vendors an industry-standard way of attaching their management systems to NetView. It would also help IBM down the road to OSI by letting it use OSI protocols to manage any new SNA products it may develop in the future ("IBM execs open up on net management issues," *NW,* July 30).

Aside from its OSI/NM Forum proposal, Big Blue is teaming with 3Com Corp. to create a variation of CMIP that would be used to manage internetworked Ethernet and token-ring local-area networks ("IBM, 3Com work to ease management of local nets," *NW,* July 16). That promises to provide a means by which to manage multiple LANs from a central point using OSI protocols.

Additionally, British Telecommunications PLC, MCI Communications Corp. and Telecom Canada have proposed the use of CMIP over CCS7 nets to both the Consultative Committee on International Telephony and Telegraphy and the OSI/NM Forum, according to Ian Sugarbroad, Northern Telecom, Inc.'s representative to the forum and its former vice-president. That would help carriers use the CCS7 net to manage their public networks, which could indirectly benefit users if carriers agree to pass on management data applicable to users' networks (see "Carriers' CMIP plan could benefit users," this page).

Plus there is another implementation of CMIP, dubbed CMIP over TCP/IP (CMOT). Some vendors are turning to the OSI/NM Forum for direction on how to implement CMOT in a way that provides a transition path to OSI, Sugarbroad said.

The OSI/NM Forum has not yet acted on any of the three proposals, he said. In October, the forum's strategy and planning group, which has been studying the proposals, is scheduled to present its findings.

"Right now, CMOT and SNA are at the top of the discussion group," Sugarbroad said. He added that only the carriers feel strongly about using CMIP over CCS7, with the rest of the group thinking that SNA and TCP/IP as transports would offer more immediate benefits to users.

Analysts view the different CMIP/CMIS proposals as a positive step.

"It provides a bridge between the proprietary world and the OSI world — that's the reason IBM will do it," said Dale Kutnick, president and research director at the META Group, a consultancy in Westport, Conn.

Not for purists

Jim Herman, a principal at Northeast Consultancy Resources, Inc. in Boston, agreed with Kutnick.

"I think it's much more important that everybody agree to use CMIP than it is to get CMIP over a pure OSI stack," Herman said. "Yes, the protocol purists will be appalled by this because it's ugly and it's not the way things were meant to be."

Purists such as DEC, which is banking on the success of OSI by touting its OSI-compliant DECnet Phase V and Enterprise Management Architecture, are unhappy with the developments surrounding CMIP/CMIS.

"[The OSI/NM Forum] has chosen which standards at each level should be used to communicate [management] information between systems. To even propose for that to happen over a proprietary stack is sort of against the whole concept of making things open," said Bill Gassman, DEC's marketing manager for network management.

AT&T, another vendor that has invested heavily in OSI net management within its Unified Network Management Architecture, also takes issue with using CMIP/CMIS over non-OSI nets.

"I think there needs to be mechanisms through which customers can evolve to full OSI, [but] I'm not sure if retrofitting the OSI model is the right way to go," said Skip Jonas, staff manager of network management product management at AT&T. ◻

Carriers' CMIP plan could benefit users

Users stand to benefit indirectly from a proposal by several carriers to use OSI net management protocols over Common Channel Signaling System 7 (CCS7) to collect management data on public nets and pass some of it to customers.

British Telecommunications PLC, MCI Communications Corp. and Telecom Canada are backing a proposal to use Open Systems Interconnection net management protocols over CCS7 to manage their public networks. The idea has been proposed to both the Consultative Committee on International Telephony and Telegraphy and the OSI/Network Management (NM) Forum, according to Ian Sugarbroad, Northern Telecom, Inc.'s representative to the OSI/NM Forum.

While it's technically feasible for the carriers to allow users to garner management data from CCS7 using a management system based on the Common Management Information Protocol (CMIP) and Common Management Information Services (CMIS), no one expects that to happen because it could put carrier's nets at risk of abuse.

But CMIP and CMIS could enable carriers to provide a fairly seamless mechanism for them to pass information to users through a gateway management system. Such a gateway would lock users out from the workings of CCS7 but give them access to management data.

Carriers are interested in using CCS7 as a transport mechanism for net management data because they claim it is a reliable and efficient network.

Bell Communications Research is also working on a protocol, dubbed Operations Maintenance Application Part (OMAP), that supports much of the same set of operations and parameters as CMIP and CMIS do. OMAP packets would run over the CCS7 net to check, for example, for points-of-routing failure and find the root of failure, said Lyndon Ong, a member of Bellcore's technical staff.

Skip Jonas, staff manager for network management product management at AT&T, said users can expect the use of CMIP or similar protocols, such as OMAP, to lead to more enhanced management data on carrier services that use CCS7.

— *Paul Desmond*

Groups say AT&T withheld savings

continued from page 2

lion. The groups say that savings to AT&T, based on its 64% share of the switched services market alone, were about $621 million. But in its annual price cap filing, which took effect July 1, AT&T proposed lowering rates by only $300 million — a difference of $321 million.

The groups say that, in the price cap filing, AT&T showed a savings of $482 million from access charge reductions. Even if AT&T's numbers are correct, they imply that AT&T didn't pass on $182 million in savings.

> FCC Chairman Alfred Sikes said that to his knowledge, "There is no law requiring flow-through [of access charge savings]."
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The FCC and AT&T insist that the carrier has passed on all savings realized from the lower access charges. In a statement issued last week, the FCC said, "The full amount of interstate access rate cuts that took effect July 1, 1990, is currently reflected in AT&T's rates. During its first year under price caps, AT&T exercised the downward pricing flexibility permitted under price cap regulation, voluntarily reducing rates in advance of changes in access costs."

Tom Norris, corporate vice-president for federal regulatory affairs at AT&T, told *Network World* the access charge reductions resulted in savings of $482 million to AT&T, the full amount of which was passed on to customers in the carrier's price cap filing. He said the carrier cut rates by only $300 million because of changes in other factors in the price cap formula and earlier rate reductions.

The issue of when and how much money carriers pass along when they realize savings from reduced access charges is a murky one. Under rate-of-return regulation, any windfall such as access charge reductions was passed along to customers if it caused AT&T to earn more than its 12% allowable rate of return.

If the savings didn't cause the carrier to exceed that level, there was no formal mechanism that forced AT&T to pass the savings along. Norris acknowledged that in most instances since divestiture, which created the access charge system, AT&T has passed on all savings from access charge reductions. However, he insisted that was not dictated by the FCC and was not mandatory. Since the price cap formula takes into account access charge reductions, users are getting the full benefit of those reductions, Norris said.

However, Brian Moir, counsel for ICA, says that because access charges are only one factor in the price cap formula, if other costs increase significantly, the access charge savings will be offset. Under rate-of-return regulation, AT&T was expected by the FCC to pass along 100% of the access charge reduction, regardless of whether its other costs rose, he said.

Earlier this month, FCC Chairman Alfred Sikes told the House Subcommittee on Telecommunications and Finance that it was his intention for AT&T to pass savings to users under price caps. However, Sikes also said that to his knowledge, "There is no law requiring flow-through [of access charge savings]."

He promised to examine the matter to ensure that AT&T is passing along all savings from access charge reductions. Sikes said he would issue a report on how consumers are faring under price cap regulation for AT&T as soon as possible.

AT&T was placed under the new form of regulation on July 1, 1989. ◻

NETWORK WORLD

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NTI supports frame relay

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Frame relay is an emerging ISDN standard that defines how packets are transmitted between devices such as local-area network bridges or routers and T-1 multiplexers, packet switches or central office switches. Frame relay, which is ideally suited for use with fast packet services, enables users to allocate a backbone circuit's full bandwidth — up to 1.544M bit/sec — to applications as needed, rather than assigning fixed channels to specific applications. As such, frame relay is well positioned to support bursty applications such as LAN-to-LAN interconnection.

Users can employ 64K or switched 56K bit/sec service, channelized or unchannelized T-1, and Basic Rate Interface or Primary Rate Interface links to access the frame relay switch.

Frame relay uses packets of variable length with a 16-bit header that includes flow control and routing information. Error correction and flow control are handled at network end points, in contrast to X.25, which requires error correction at every node.

That increases performance and reduces bandwidth requirements, which in turn cuts communications costs and lessens the number of packet-forwarding devices required in the network, according to Lippis of Northeast Consulting Resources.

Users' customer premises equipment will have to be equipped with a frame relay interface to take advantage of fast packet services.

Vendors such as Netrix Corp., Newbridge Networks, Inc. and StrataCom, Inc. have announced frame relay support for their T-1 multiplexers. Frame relay has also won support from major LAN bridge and router vendors. Such companies as cisco Systems, Inc., Digital Equipment Corp., Racal-Milgo, Vitalink Communications Corp. and Wellfleet Communications, Inc. are expected to add frame relay support to their products within the next year.

Joseph Marmion, director of market developmont for carrier networks at Northern Telecom, said more than 800 SuperNodes are currently in use in long-haul and local carrier networks.

US Sprint Communications Co., which uses SuperNodes exclusively in its net, and MCI Communications Corp., which uses SuperNodes extensively, are Northern Telecom's top two SuperNode customers, Marmion said. Some regional Bell holding companies also use SuperNodes.

Northern Telecom's support for frame relay is in the form of a new optional software module for the DMS-100 and DMS-250 SuperNode's operating software and frame relay interface boards that can be housed in an existing adjunct cabinet. The products are dubbed DataSPAN.

Scott Schauer, a product manager with Northern Telecom's Advanced Data Services Group in Raleigh, N.C., said the software will be available for testing by carriers in the first quarter of 1991 but will not be generally available until the end of 1991.

Mark LaRow, a consultant with Network Strategies, a consulting practice of Ernst & Young in Fairfax, Va., said carriers probably won't roll out commercial services based on frame relay until the first quarter of 1992.

"For years, the carriers have been marshaling their resources to deploy and market ISDN," LaRow said. "If carriers decide they want to offer services based on frame relay, they'll have to divert some of those resources away from ISDN."

Although US Sprint uses SuperNodes exclusively at its 41 domestic switching centers, the carrier has not decided whether it will implement frame relay.

Floyd Trogdon, a senior vice-president for Sprint Data Group in Reston, Va., said the carrier will decide in the next 30 to 60 days on a means of supporting frame relay. "Although we are excited and committed to using frame relay technology, we are evaluating a number of approaches, including Northern Telecom's," he said. Trogdon declined to say when the carrier would implement frame relay and offer frame relay-based services.

Bart Stuck, president of Business Strategies, Inc., a Westport, Conn., consultancy, said that after implementing frame relay in their networks, carriers will face tough marketing challenges.

"The telephone companies have been unsuccessful selling existing packet-switching services," Stuck said. "And that's all these advanced services are — souped-up X.25 services."

Protests delay profile passage

continued from page 2

would summon the necessary customer profile on screen.

If all the agents are busy, an application would capture and store the caller's number for callback when an agent is available.

The NIU Forum members that drafted the Incoming Call Management Application Profile were AT&T, American Express Co., Aristacom, City Federal Savings Bank, Northern Telecom, Inc., United Services Automobile Association, US West Communications and 3M Corp.

> Because the forum has worked to achieve consensus on all voting issues, Clark's lone dissenting voice shelved the vote indefinitely.
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The profile was all set for a show-of-hands vote, when Ira Clark, a staff consultant at the Mt. Laurel, N.J.-based consulting firm of Dale, Gesek, McWilliams & Sheridan, Inc., raised an objection.

Clark opposed approval of the profile because it did not require that services developed according to the specifications pass conformance tests. He said the lack of conformance requirements violated procedures of the International Standards Organization for profiles.

Because the NIU Forum has worked informally to achieve full consensus on all voting issues, Clark's lone dissenting voice shelved the vote indefinitely.

NIU Forum Chairman Shukri Wakid, who had hoped the profile would pass unencumbered, reacted to the incident by calling for formal voting guidelines to be adopted by the forum. Wakid said that instead of basing future ratification of profiles on a show-of-hands consensus, the group should use a more formal balloting vote.

But organizing a formal voting procedure could take time. Members will have to approve the draft of NIU Forum procedures, and the membership roster has not even been officially finalized yet.

Jim Kendrick, program manager of Aeronautical Radio, Inc. and chairman of the Users Workshop Steering Committee, expressed disappointment about last week's upset but said he is confident the profile will later receive the necessary vote.

Some observers see a silver lining in the incident. James Briggs, senior engineer of corporate information systems technology management-telecom at Eastman Kodak Co., who chairs the Manufacturing and Processing Industries users workshop, said he is pleased about the delay.

"In an ideal world, I'd be disappointed, but I'd be happy to see a minor delay and be sure we follow due process," Briggs said. He added that commitment from users and vendors that support the forum has grown and the group needs to adopt formal procedures to manage change better.

LAN vendors help resellers

continued from page 4

announced a program to certify technicians who have achieved a certain level of training or technical understanding. A goal of the program is to optimize the design and support of users' Banyan networks by resellers, D'Arezzo said.

"Given the fact that so many users have multivendor environments today, resellers are best equipped to provide the customer with the best available network components for each part of the total solution," D'Arezzo said. "We want to make sure that resellers can handle our part of the network."

LAN market leader Novell remains "fully committed to selling through reseller channels," said Kim Peyser, vice-president of channel sales for Novell, whose products are sold by more than 12,000 resellers. "We feel that we have enough of a challenge ahead of us with the engineering of LAN products."

In February, Novell announced the Platinum Reseller Program to aid the company's most knowledgeable and experienced resellers. Platinum Resellers receive Novell's highest level of technical support, which includes timely product information through Novell's Technical Information Database. Technicians recognized as Certified Network Engineers by Novell also have access to Novell service engineers for help in solving complex customer problems.

Last month, Microsoft Corp. announced its Network Specialist Program, which the company will use to market LAN Manager and SQL Server through resellers in addition to OEMs. The company said it will authorize 1,000 key network resellers in the U.S. and abroad ("Microsoft spells out plans to market LAN Manager," *NW*, July 10).

"Our strategy is to find the best resellers in the business and then give our partners all the help they need to do it right," said Mike Murray, general manager of Microsoft's network business unit. Microsoft has promised new dealers complimentary training and a year of free support. To handle the program, Microsoft plans to add several hundred people to its sales and product support staff.

Novell rival 3Com Corp. is working hard to improve relations with its resellers, many of which were upset last year when 3Com increased its direct sales efforts — a policy it has since revised. On Jan. 1, 3Com announced its Territory Management program, under which the company's own sales representatives became "channel neutral" in that they are now compensated equally for helping 3Com sell, either through direct or indirect channels.

3Com markets its adapter boards through resellers and sells its net operating system and internetworking products through direct and indirect channels.

"One of the LAN industry's challenges is to grow the value-added reseller channel in a healthy way to meet the needs of the growing number of customers using LANs and WANs for computing platforms," said Bob Finocchio, 3Com's executive vice-president of field operations.

Finocchio said resellers are providing the same type of service and support that big systems companies such as IBM offer "with their proprietary products, only that our [value-added resellers] do it with our products combined with products from other vendors."

Firms with widespread LANs aided by resellers

A new breed of nationwide local-area network systems integrators/resellers is emerging to help customers deal with their far-flung LAN operations.

Part of this new breed are US Connect and Evernet Systems, Inc., which have launched efforts to serve users with multiple sites across the country during the past year ("Firms woo LAN users with national service," *NW*, Feb. 12).

US Connect is an organization of independent LAN systems integrators and resellers that work together to serve large accounts, while Evernet is acquiring resellers and integrators across the country to form a nationwide LAN sales and support team.

The ability of a reseller to work with a user in many localities is becoming increasingly attractive to users, analysts said. Retailers that offer LAN products are also taking steps to help users with increasingly sophisticated LAN requirements.

For example, Computerland Corp. last month introduced the Computerland Network Consultant program to provide LAN training to its network sales force. The program is cosponsored by LAN players such as Novell, Inc. and 3Com Corp.

"What I think we are beginning to see is that LAN vendors are doing a better job of listening to what end users want and need, and they are passing this knowledge on to resellers," said Gail James, president of LanQuest Labs, a division of LanQuest Group in San Jose, Calif. "It's a sign that the LAN market is maturing."

— Bob Brown

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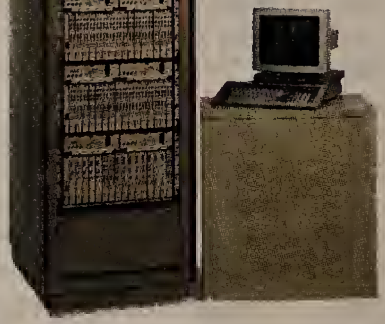

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